This section describes the surface water hydrology and groundwater from both regional and local perspectives, as well as site-specific location hydraulics associated with the proposed project. The following evaluation is based on a review of existing literature and data and field reconnaissance to identify local water resource conditions, including private wells within the site boundary established for the Proposed Action. Geology, fluvial geomorphology, and soils issues are evaluated in Section 3.3. Fishery issues are evaluated in Section 3.6.

3.4.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Regional Hydrology

Surface Water Hydrology

The TRD is the major determinant of the hydrologic conditions in the channel of the Trinity River in the reach downstream of Lewiston Dam. Accretion flow from tributaries to the Trinity River upstream of the project sites modifies the flow regime and contributes water, sediment, and other materials throughout the water year (Figure 3.4-1). The Trinity River basin encompasses approximately 2,965 square miles, about one-quarter of which is upstream of Lewiston Dam. Elevations range from 9,025 feet (msl) at Mount Eddy at the northeastern extremity of the watershed to 300 feet msl at the confluence of the Trinity and Klamath rivers. The climate is Mediterranean with an average precipitation of 62 inches per year; throughout the basin, it varies from 30 to 70 inches and typically occurs as rain in the lower elevations and snow at the higher elevations.

The Trinity River is the largest tributary to the Klamath River. From its headwaters to its confluence with Klamath River at Weitchpec, the mainstem Trinity River is 170 miles long (Figure 3.4-2).

Construction on the TRD commenced in 1957 and storage of Trinity River water began in 1960. The Lewiston and Carr Powerhouses commenced operation in April 1964. The TRD consists of a series of dams, tunnels, and powerplants that export water from the Trinity River basin into the Sacramento River basin. Trinity and Lewiston Dams currently regulate Trinity River flows below River Mile (RM) 112. With a capacity of 2.4 million acre-feet (maf), Trinity Lake is the largest component of the TRD. Releases from Trinity Lake are regulated in Lewiston Reservoir prior to release downstream into the Trinity River. Lewiston Reservoir also acts as a forebay for the trans-basin export of water into Whiskeytown Reservoir via the Clear Creek Tunnel. Lewiston Dam marks the upstream limit of anadromous salmonid access on the Trinity River.

The reach of the Trinity River downstream of Lewiston Dam to the confluence with the North Fork Trinity River is most affected by the changes in hydrologic regimes imposed by the TRD. Tributaries contribute relatively little accretion flow to this reach on an annual basis, although certain components of



R:Projects\10010 - Mechanical Channel Rehab Sites on Mainstem Trinity River/Canyon Creek Sites\Graphics\Fig_3.4-1_Local_Hydrology.pdf 11-08-05 RJ

- Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78



the annual hydrograph are locally modified by various tributary inflows. Prior to authorization of the 2000 ROD, the average annual flow volumes released from the TRD into the Trinity River at Lewiston Dam were historically reduced as much as 90 percent, compared to pre-dam conditions. Consequently, this reach has been subjected to substantial alteration of the channel form and function.

Prior to the completion of the TRD, flows in the Trinity River were highly variable, ranging from summer flows of 25 cubic feet per second (cfs) to extreme winter events with instantaneous peak flows greater than 100,000 cfs. The maximum recorded flow at Lewiston was 71,600 in 1955. Annual hydrographs typically followed a seasonal pattern of high winter and spring flows followed by low summer and fall flows. Total annual flow volumes at Lewiston ranged from 0.27 to 2.7 maf, with an average of 1.2 maf.

From 1962 to 1979, CVP diversions delivered nearly 90 percent of the Trinity River annual water yield (above Lewiston) into the Sacramento River for urban and agricultural uses. After 1979, river releases were increased from 110,000 to 340,000 acre-feet (af) annually, thereby increasing the available flow in the river by as much as 70 percent.

Although the 2000 ROD established an annual volume based on water year types, litigation in the federal district court resulted in delayed implementation of the flow releases for water years 2001-2004. Ultimately the ROD was upheld, and the 2005 water year incorporated the schedule established by the TRRP in accordance with the ROD. This schedule is intended to be revised on an annual basis depending on the water year type (established in the ROD).

Periodically, the increased water releases are made from Trinity Dam consistent with Reclamation safety of dams criteria intended to prevent overtopping of Trinity Dam. Although flood control is not an authorized purpose of the TRD, flood control benefits are provided through normal operations.

Trinity Dam has limited release capacity below the spillway crest elevation. Studies completed by the Corps in 1974 and Reclamation in 1975 showed the spillway and outlet works at Trinity Dam are not sufficient to safely pass the anticipated design flood inflow. Therefore, Reclamation implemented safety of dams criteria stipulating flood season release and storage criteria at Trinity Dam to reduce the potential for overtopping during large flood events. The safety of dams criteria attempt to prevent storage from exceeding 2.1 maf from November through March. The safety of dams criteria begin to prescribe reservoir releases when storage in Trinity Lake is forecast to exceed 2.0 maf during the November to March period.

The safety of dams release criteria specify that Judge Francis Carr Powerplant capacity should be used as a first preference destination for safety of dams releases made at Trinity Dam. Trinity River releases are made as a second preference destination. During significant Northern California high-water flood events, the Sacramento River water stages are also a concern. Under such high-water conditions, the water that would otherwise move through the Carr Powerplant is routed to the Trinity River. Total river release is limited to 6,000 cfs below Lewiston Dam under safety of dams criteria because of local high water concerns and local bridge flow capacities until local inflows to Lewiston Lake plus Trinity Dam spillway flows exceed 6,000 cfs plus the Carr Powerplant discharge.

The flood season within the Trinity River basin is typically between October and April, when over 90 percent of the annual precipitation falls. Floods on the Trinity River are controlled to some extent by the TRD. The greatest flood recorded for the area occurred in December 1955, although the ungaged flood of 1861-1862 likely exceeded all known historical events. Floods have also been recorded for the years 1926, 1928, 1937, 1940, 1941, 1948, 1950, 1958, 1960, 1963, 1964, 1972, and 1974 (FEMA 1996) and 1997.

From Lewiston Dam downstream, a number of major tributaries provide accretion flow to the Trinity River before it enters the Klamath River. These tributaries include Rush Creek, Indian Creek, Weaver Creek, Canyon Creek, the North Fork Trinity River, Big French Creek, New River, South Fork Trinity River, Willow Creek, Horse Linto Creek, Tish Tang Creek, and Mill Creek.

The pattern of winter precipitation increases steadily westward in the basin as favorable orographic conditions extract more moisture from Pacific weather fronts closer to the coast and rain shadow effects reduce precipitation in the eastern portion of the watershed. Consequently, winter peak flows in the downstream portions of the Trinity River are much higher than those upstream, with greatly reduced influence from the control of flows by the TRD.

Trinity River flows at the Hoopa gage average around 10,000 cfs during January through March. A peak flow volume of 122,000 cfs was recorded at the Hoopa gage during the January 1997 flood, although less than 7,000 cfs was released from Lewiston Dam. During the seasonal dry period, following peak spring snowmelt from high mountainous areas of the watershed, flow accretion and its influence on mainstem hydrology decreases dramatically. During summer and fall baseflow periods, tributary accretion flows contribute minimally to low release volumes from the TRD. In general, during low flow periods, flow accretion is minimal from Lewiston Dam to Canyon Creek, and becomes most significant downstream of the confluence with the North Fork Trinity River. However, during high flows (e.g., > 10 year recurrence interval), tributary accretion substantially exceeds dam release flows within 15 to 20 miles downstream of Lewiston Dam (McBain and Trush 1997). Tributary flow influence on this reach during flood events and as a proportion of the high range of average daily flows are a reversal of pre-dam conditions, where mainstem flows would almost always exceed the contribution of tributaries. Despite tributary contributions, flood frequency and peak flows in the uppermost reaches of the mainstem below the TRD are greatly reduced compared to pre-dam conditions.

Groundwater

Most usable groundwater in the mountainous Trinity River basin occurs in widely scattered alluviumfilled valleys, such as those immediately adjacent to the Trinity River. These valleys contain only small quantities of recoverable groundwater and, therefore, are not considered a major source. A number of shallow wells adjacent to the river provide water for domestic purposes, although none exist within the activity areas established for the rehabilitation sites.

Local Hydrology

Surface Water Hydrology

Within the project site boundaries, the Trinity River consists of a single channel that is constrained by riparian berms, typically at flows less than 6,000 cfs. In general, the aquatic habitat within this reach of the river is considered simplified, with a reoccurring sequence of runs and low-gradient riffle habitat, although pools and glides are evident in various locations. Additional information on aquatic habitat is provided in Section 3.6 of this document.

Conner Creek

The right bank above the berm has a large area of floodplain, a portion of which is occupied by a 2.42acre pond. In the inflection/point bar area of the sharp meander bend, there is also a large area of floodplain above the berm on the left bank. Conner Creek is a tributary channel that enters the mainstem channel at the upstream end of the Conner Creek site boundary and contributes flow and sediment to the Trinity River.

Valdor Gulch

East Valdor Gulch and West Valdor Gulch merge together just north of the Valdor Gulch site boundary and enter the mainstem channel of Trinity River as a tributary downstream and within the Valdor Gulch site boundary. These creeks contribute flow and sediment to the Trinity River on an intermittent basis. Currently runoff from SR 299 is collected by a series of drainage structures and conveyed under the highway to various locations within the Valdor Gulch project site.

Elkhorn

The downstream extremity of the right bank within the Elkhorn site boundary occupies the SR 299 embankment. Currently runoff from SR 299 is collected by a series of drainage structures and conveyed under the highway to various locations within the Elkhorn site boundary.

Pear Tree Gulch

The upstream extremity of the right bank within the Pear Tree Gulch boundary occupies the SR 299 embankment. Pear Tree Gulch is a tributary channel that enters the mainstem channel downstream within the site boundary. Pear Tree Gulch contributes flow and sediment to the Trinity River on an intermittent basis. During some component periods of the annual hydrograph, accretion flow from the Pear Tree Gulch tributary augments the TRD releases in the vicinity of RM 75.

Groundwater

Groundwater water table interactions with the wetted channel include groundwater contributions to baseflow during low-flow periods, and water table elevation related to increased head in the channel during higher flows. Given the alluvial nature of rehabilitation sites and the relative abundance of coarse substrate within these alluvial deposits, dynamic hyporheic flow (flow through alluvial materials outside channel bed) is likely to occur through these materials during some or all of most water years. Currently existing off-channel wetlands appear to be responsive to changes in stage in the mainstem channel,

3.4-6

although the uncertainties associated with variables such as time lag and/or attenuation, substrate composition, and evapotranspiration limit the ability to predict these changes. Chemical and biological components of groundwater exchange between wetlands, the hyporheic zone, the water table, and the channel may have implications for water quality that would be affected by the Proposed Action.

Floodplain Hydraulics

The floodplain of the Trinity River is identified in the *Flood Insurance Study, Trinity County, California and Incorporated Areas* by the Federal Emergency Management Agency (FEMA). Actual floodplain designations are in the accompanying Flood Insurance Rate Maps (FIRM) excerpt. Figure 3.4-3 represents the delineation of the FIRM map as it pertains to the Proposed Action. The floodplain designations for the Trinity River in the general vicinity of the Canyon Creek project were identified from a flood study performed by the Corps (U.S. Army Corps of Engineers 1976). The countywide FIRM map became effective August 16, 1988.

The proposed project site boundaries, excluding some upland areas, are within the 100-year flood plain as designated by FEMA, and are designated within Special Flood Hazard Area Zones A and X. Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations (BFEs) or depths are shown within this zone; only approximations of floodplain boundaries are shown. Mandatory flood insurance purchase requirements apply within Zone A. Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

Recent studies elsewhere on the river indicate that the flood magnitude determined by the 1976 Corps study may underestimate the actual flood magnitude and, therefore, the extents of the floodplain. As this project and other TRRP rehabilitation projects are implemented in the future, updated hydrology and topography could be used to revise the existing flood insurance study and flood insurance rate maps. This issue will be addressed at the appropriate time by FEMA and Trinity County. Under the County's Floodplain Management Ordinance, projects within the floodplain are not to increase the 100-year flood elevations by more than 12 inches. This criterion was used by the design team to ensure that the proposed activities were feasible at the project sites. To gage the effect of the project on the floodplain, water surface profiles for the existing and proposed ground surfaces were developed as part of the hydraulic modeling used in project design. These profiles show that neither the Proposed Action nor Alternative 1 would increase flood elevations by more than 12 inches at any of the project sites.







Figure 3.4-3 100-year Floodplain and Flood Insurance Rate Map

3.4.2 REGULATORY FRAMEWORK

Federal

Federal Emergency Management Agency

Projects encroaching on a designated floodplain, as established by FEMA, are required to prepare a Location Hydraulic Study to assess risk in compliance with Executive Order 11988. The hydraulic analysis previously described indicates that the activities evaluated for either action alternative will not raise the 100-year flood elevation by more than 12 inches. A Location Hydraulic Study was prepared for the Hocker Flat Rehabilitation site: Trinity River Mile 78 to 79.1, a half mile upstream. This study provided the foundational hydrology used to design and evaluate the Canyon Creek project and is included as Appendix G.

Trinity County is a participant in the National Flood Insurance Program (NFIP). As a participant in the NFIP, the County is eligible for federal flood disaster assistance funds, including damages to roads, bridges, and other public works infrastructure. In addition, federal flood insurance is made available to all property owners throughout the county. In return, the County is required to enforce, at a minimum, the standards established by the FEMA. One of these standards requires that construction will not result in an increase in the BFE for areas within a regulatory floodway. It also includes minimum standards for areas where no floodways have been established, such as the Trinity River. These standards state that no development shall be permitted unless it can be shown that the anticipated development will not increase the water surface elevation of the base flood more than 1 foot at any point within the community. Minimum standards also require that a Letter of Map Revision be submitted to FEMA to correct the Flood Insurance Rate Map if base flood elevations increase or decrease.

Federal Executive Order 11988 (Floodplain Encroachment)

Trinity County's requirements under the Floodplain Management Ordinance will be followed to ensure compliance with Federal Executive Order 11988.

Local

Trinity County Floodplain Management Ordinance

The Trinity County Floodplain Management Ordinance, found in Section 29.4 of the County Zoning Ordinance, requires a Floodplain Development Permit for projects that alter the Trinity River floodplain on private lands within the jurisdiction of Trinity County. The principal requirement of the permit is certification by a registered professional engineer or architect requiring that construction or replacement of bridges, roadways, and bank slope protection devices will not adversely affect the flood-carrying capacity of any altered portion of the watercourse, and will not cumulatively raise the 100-year floodplain elevations by more than 1 foot in the project area. The ordinance also requires notification of adjacent communities, the CDFG, the Corps, the Regional Water Board, and DWR prior to any alteration or relocation of a watercourse and the submission of evidence of such notification to FEMA.

The Trinity County Floodplain Management Ordinance includes the following goals and policies:

Flood Hazard (FH) Zoning District

Applicability of Flood Hazard (FH) Zoning District

All of the following areas shall be zoned as FH:

- A. Areas designated as a Regulatory Floodway or Zone AE on FEMA's Flood Insurance Rate Maps (FIRM)
- B. Areas designated on the FIRM as Zone A along the Trinity River
- C. Areas identified as 100-year flood plain on parcel maps and final maps filed for record in accordance with the Trinity County Subdivision Ordinance
- D. Areas identified as 100-year flood plain in a use permit condition or other county entitlement
- E. Areas identified as 100-year flood plain by a flood study approved by the County Board of Supervisors

Uses Permitted

- A. Agricultural uses not involving the construction of structures or other uses which would limit the flow of flood waters
- B. Placement and repair of three strand smooth-wire or barbed-wire fencing
- C. Maintenance and repair of existing bridges, culverts, and roadways
- D. Recreational mining or dredging, not subject to the Surface Mining and Reclamation Act (SMARA)

Uses Permitted Subject to First Securing a Floodplain Development Permit

The following uses may be permitted subject to first securing a Director's Issued Floodplain Development Permit, and, where applicable, complying with Regulatory Floodway provisions excerpted from Section 2.5 of the Trinity County Floodplain Management Ordinance as listed below.

- A. Construction or replacement of bridges, culverts, roadways, bank slope protection devices and levees, and fisheries or wildlife habitat improvement projects shall be allowed, provided a certification by a registered professional engineer is provided demonstrating that the net effect of the project, in conjunction with all other projects developed on the affected stream reach since the effective date of the FIRM for said stream, will not cumulatively increase flood waters of the stream by more than one foot in the project area. Such certification shall be provided to the Floodplain Administrator.
- B. Substantial improvements to existing structures, subject to compliance with development standards in the Flood Hazard Overlay (FHO) zoning district.
- C. Development of structures within the FH zoning district may be permitted upon first securing a Floodplain Development Permit, provided that there are no building sites lying outside of the FH zoning district. If approved, development shall comply with development standards in Section 3.4.

Uses Permitted in Regulatory Floodways

A "Regulatory Floodway," lying within an area of special flood hazard as shown on a FIRM map, is an extremely hazardous area due to the velocity of floodwaters, which can carry debris and potential projectiles, as well as erosion potential. The following provisions apply to Regulatory Floodways:

- A. Encroachments, including fill, new construction, substantial improvement, and other new development, are prohibited within floodways unless certification by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in [the base] flood elevation during the occurrence of the base flood discharge.
- B. If Section 2.5A is satisfied, all new construction, substantial improvement, and other proposed new development shall comply with all other applicable flood hazard reduction provisions in Section 3.4.
- C. If Section 2.5A cannot be satisfied, and the Floodplain Administrator determines that no practicable alternative exists to revising the boundaries of the previously adopted floodway, then the Floodplain Administrator may request an amendment to the floodway map, in compliance with 44 CFR Section 65.7, "Floodway Revisions."

Development Standards for Lands Lying Within the Flood Hazard (FH) Zoning District

Development standards for the allowable uses listed above for lands lying within the FH zoning district are the same as development standards for lands lying within the FHO zoning district (Section 3.4).

Flood Hazard Overlay (FHO) Zoning District

Applicability of the Flood Hazard Overlay (FHO) Zoning District

The following areas shall be zoned FHO:

All of those lands as designated on FEMA's FIRMs as Zone AO or AH (areas of shallow flooding), or lands designated as Zone A which are not included in a Flood Hazard zoning district.

Permitted uses:

All uses permitted in the underlying zone shall be permitted in the FHO district, provided that a Floodplain Development Permit shall be obtained prior to commencement of construction and issuance of any other county entitlement.

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The general plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies related to water resources issues associated with the Proposed Action were taken from the applicable elements of the general plan (Trinity County 2001), including the Junction City Community Plan (1987).

Countywide Goals and Objectives

Safety Element

The following goals and objectives and policies are applicable to the proposed action.

Flood Hazard Goal

Reduce loss of life and property by establishing development standards for areas subject to flooding.

- Require all development to meet federal, state and local regulations for floodplain management protection, including the encouragement of upgrading existing structures to meet adopted standards
- Require all development to meet the development standards of the National Flood Insurance Act regulations in Title 44 of the Code of Federal regulations, Section 60.3, as implemented through the County Zoning Ordinance section 29.4
- Maintain or return to Open Space lands subject to flooding

Junction City Community Plan Goals and Objectives

This plan covers approximately 42 square miles (27,000 acres) of area centered on the Trinity River from Maxwell Creek to slightly downstream from Helena.

Hazards

This element of the Plan is intended to protect both private and public investments in structures and related improvements from flood hazards. Flooding has historically been the worst natural disaster within the Plan area. Therefore, the following goal is applicable to the Proposed Action:

Goal: To protect public and private developments from flood hazards. Associated objectives include:

- Assurance that future developments do not create flood hazards either to themselves or to downstream developments
- Incorporation of Flood Hazard Zoning on those areas of the Plan subject to flooding

Project Consistency with the Trinity County General Plan

This section compares the goals and objectives of the Proposed Action to the relevant local planning policies (i.e., Trinity County General Plan, Junction City Community Plan) to determine if there are any inconsistencies.

The goals and objectives described in Chapter 1 are generally compatible with the applicable General Plan goals and policies summarized above. The overall goal of the Proposed Action is to rehabilitate the sites so that they function in a manner that is closer to historic conditions (e.g., pre-Lewiston Dam).

3.4.3 Environmental Consequences/Impacts and Mitigation measures

Methodology

The Proposed Action is designed to minimize placement of excavated material below the BFE. Hydraulic models were used to evaluate the alternatives described in Chapter 2, and design criteria were developed to ensure that no proposed activities would result in an obstruction to flow or an increase in the BFE by more than 12 inches. The two action alternatives evaluated in this document are designed to ensure that no increase in base flood elevation over what currently exists would occur.

Also, to reduce the risk of loss, injury, or death of individuals within or adjacent to the project sites, specific flood frequencies, flows, and corresponding water surface elevations were calculated for the Proposed Action. This was necessary due to the fact that specific hydrologic and hydraulic data were not available from the FEMA FIRM information and because of the adequacy of data used in the 1976 Corps study. The hydraulic analyses identified 100-year frequency flood flows based on additional hydrologic data and assuming the full implementation of the flow regime identified in the ROD (Department of Interior, 2000).

To assess the sensitivity of the river to placement of material below the BFE, a hydraulic analysis was performed for each alternative to simulate the potential effects of the Proposed Action. The analysis was performed to assess the sensitivity of the river to encroachments, not to assess the feasibility of a specific design.

Significance Criteria

A project would have a significant impact related to water resources if it could subject people, structures, or other resources to substantial changes in flood hazards, or result in modification to groundwater resources.

The Proposed Action would result in a significant impact to hydraulics if one of the following conditions occurred:

- an increase in the base floodwater surface elevation of greater than 1 foot (12 inches);
- substantial alteration of the existing drainage pattern of a site or area, including through the
 alteration of the course of a stream or river, or substantial increase of the rate or amount of
 surface runoff in a manner that would result in flooding on- or off-site; or
- exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

The Proposed Action would result in a significant impact to groundwater if one of the following conditions occurred:

- a long-term decline in groundwater elevations (or a net reduction in groundwater storage) due to interference with recharge;
- detectable land subsidence;

- . violation of any water quality standards or waste discharge requirements intended to protect groundwater quality; or
- detectable degradation of groundwater quality.

Groundwater impacts were assessed at the scale of a groundwater basin or sub-basin. The significance of declining (or increasing) water levels depends in part on the duration and permanence of the impact. Because groundwater elevations fluctuate naturally due to changes in rainfall, short-term changes in groundwater elevations were not considered significant.

Impacts and Mitigation Measures

Table 3.4-1 summarizes the potential water resources impacts resulting from the Proposed Action.

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TABLE 3.4-1.
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	Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
1.	Implementation of the proposed project could result in a temporary or permanent increase in base floodwater surface elevation.	All sites	NI	LS	LS	N/A ¹	N/A ¹
2.	Implementation of the proposed project could result in permanent decline in groundwater elevations, or permanent change in groundwater quality.	All sites	NI	LS	LS	N/A ¹	N/A ¹
3.	Implementation of the proposed project may expose people or structures to a significant risk of injury, death or loss involving flooding.	All sites	NI	LS	LS	N/A ¹	N/A ¹

Notes: LS

NI

=

=

Less than Significant S = Significant SU = Significant Unavoidable No Impact В =

Beneficial N/A =Not Applicable

¹Because this potential impact is less than significant, no mitigation is required.

All Sites (Conner Creek, Valdor Gulch, Elkhorn, and Pear Tree Gulch)

Impact 3.4-1:Implementation of the proposed project could result in a permanent increase in base
floodwater surface elevation. No Impact for the No-Action Alternative; Less Than
Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the site boundary established for the proposed project would not be altered and existing base floodwater surface elevations would remain the same.

Proposed Action

Under the Proposed Action, the elevation and aerial extent of the floodplain of the Trinity River would be modified through the activities described in Chapter 2. The hydraulic analyses indicate that by removing the excavated material from the riverine rehabilitation areas and placing it in upland areas that are generally outside of the FEMA 100-year floodplain, flood elevations would not be increased. Therefore, implementation of the Proposed Action would not result in a significant impact to adjacent structures by increased flood risk.

Temporary storage of excavated materials or temporary placement of construction equipment or materials in the channel or floodplain at the site could affect hydraulics by temporarily elevating the base floodwater surface elevation.

Alternative 1

Under Alternative 1, a reduction of the size and nature of activities at the Conner Creek and Elkhorn sites would result in a moderate reduction in the excavation and deposition of alluvial materials that could influence channel hydraulics. The hydraulic analyses indicate that by removing the excavated material from the riverine rehabilitation areas and placing it in upland areas generally outside of the FEMA 100-year floodplain, flood elevations will not be increased. Therefore, implementation of Alternative 1 would not result in a significant impact to adjacent structures by increased flood risk.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1 Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.4-2: Implementation of the proposed project could result in a permanent decline in groundwater elevations, or permanent changes in groundwater quality. No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the proposed project would not be implemented, and no effects on local groundwater levels would occur.

Proposed Action

If the Proposed Action is implemented, the displacement of channel and floodplain materials has minimal potential to change groundwater hydraulics within the site boundary. Groundwater table elevations and water volumes in nearby off-channel wetlands would not be affected because groundwater elevations in these areas are associated with river stage. The tendency of the surface water–groundwater system to move to equilibrium conditions, and the overall absence of impacts to the regional driving mechanisms of groundwater recharge (seasonal precipitation and Trinity River flow regimes) suggest that no long-term impacts on water table elevations are likely and that no significant impacts would occur.

Alternative 1

Under Alternative 1, impacts to local groundwater levels and/or local groundwater quality would be similar to or less than those described for the Proposed Action. Specifically, no disturbance of currently existing off-channel wetlands would occur.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-3:Implementation of the proposed project may expose people or structures to a significant
risk of injury, death or loss involving flooding. No Impact for the No-Action
Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the proposed project would not be implemented, and no people or structures would be exposed to flood risks associated with the proposed project.

Proposed Action

If the Proposed Action is implemented, the placement of excavated material outside of the floodplain would not adversely impact flood elevations. The lack of structures within the site boundary provides limited opportunity for exposing people or property to flood risks.

Alternative 1

Under Alternative 1, the risk of flood-related impacts to people and/or property would be similar to or less than that described for the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1 Since no significant impact was identified, no mitigation is required. *Significance after Mitigation:* N/A.

3.5 Water Quality

This section describes water quality conditions related to the proposed rehabilitation sites from regional and local perspectives. The following evaluation is based on a review of existing literature and data, particularly the *Water Quality Control Plan for the North Coast Region*, as amended June 28, 2001 (Basin Plan) (North Coast Regional Water Quality Control Board 2001). Surface hydrology and groundwater issues are evaluated in Section 3.4, Water Resources; fisheries issues are evaluated in Section 3.6, Fishery Resources; and waters under the jurisdiction of the U.S. Army Corp of Engineers are evaluated in Section 3.7, Vegetation, Wildlife, and Wetlands.

3.5.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Water Quality Management

The Basin Plan

The Project is subject to the Basin Plan prepared by the Regional Water Board. The Basin Plan applies to the entire North Coast Region, which comprises all basins including Lower Klamath Lake and Lost River Basins draining into the Pacific Ocean from the California-Oregon state line south to the southern boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties. The Trinity River is the largest tributary within the Klamath River basin. Section 3.4, Water Resources, provides a detailed discussion of the Trinity River and the tributaries that influence the project area. The Middle Trinity River Hydrologic Area is that portion of the watershed that is downstream of Lewiston Dam to the confluence of Browns Creek. The Lower Trinity River Hydrologic Area is that portion of the watershed that is downstream of Browns Creek.

The beneficial uses and water quality objectives for the Trinity River are contained in the Basin Plan. The beneficial uses pertinent to the Trinity River are listed in Table 3.5-1. This table also shows whether these beneficial uses currently exist or whether they have the potential to exist.

The beneficial uses impaired by excessive sediment in the Trinity River are primarily those associated with supporting high-quality habitat for fish. Recreation (contact and non-contact) is another important beneficial use potentially affected by various water quality parameters (e.g., sediment, temperature). Recreation activities in the general vicinity of the rehabilitation sites include whitewater recreation, fishing, swimming, and sightseeing. Private ownership of most of Valdor Gulch restricts the onsite use to residents and guests, with the exception of public lands at the downstream end of site.

The Basin Plan identifies both numeric and narrative water quality objectives for the Trinity River. Table 3.5-2 summarizes the various water quality objectives by categories that have been established by the Regional Water Board to protect designated beneficial uses.

TABLE 3.5-1.

TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Lower Trinity River Hydrologic Area
Municipal and Domestic Supply	Existing
Agricultural Supply	Existing
Industrial Service Supply	Existing
Industrial Process Supply	Potential
Groundwater Recharge	Existing
Freshwater Replenishment	Existing
Navigation	Existing
Hydropower Generation	Potential and Existing
Water Contact Recreation	Existing
Non-Contact Water Recreation	Existing
Commercial and Sport Fishing	Existing
Cold Freshwater Habitat	Existing
Wildlife Habitat	Existing
Rare, Threatened, or Endangered Species	Existing
Migration of Aquatic Organisms	Existing
Spawning, Reproduction, and/or Early Development	Existing
Shellfish Harvesting	Potential
Aquaculture	Potential and Existing
Native American Culture	Existing

In addition to water quality objectives, the Basin Plan includes two waste discharge prohibitions that pertain to logging, construction, and associated nonpoint source activities:

- The discharge of soil, silt, bark, sawdust or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.
- The placing or disposal of soil, silt, bark, slash, or sawdust or other organic and earthen material from any logging, construction, or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.

TABLE 3.5-2.
WATER QUALITY OBJECTIVES FOR THE TRINITY RIVER

Category	Objective Threshold	Applicable Portion of Water Body	
Bacteria	BacteriaThe bacteriological quality of waters of the North Coast region shall not be degraded beyond natural background levels. In waters designated for contact recreation, the median fecal coliform concentration 		
Biostimulatory substances	Water shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.	Entire Trinity River	
Color	Water shall be free of coloration that causes nuisance or adversely affects beneficial uses.	Entire Trinity River	
Chemical constituents	Waters designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the California Code of Regulations.	Entire Trinity River	
Dissolved oxygen	Shall not be depressed below 8.0 mg/L and 50% or more of the monthly means for a calendar year must be greater than or equal to 10 mg/L.	Lower Trinity River	
Floating material	Water shall not contain floating material, including solids, liquids, foams and scum in concentrations that cause nuisance or adversely affect beneficial uses.	Entire Trinity River	
Oil and grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.	Entire Trinity River	
pH Shall not be depressed below 7.0 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.		Entire Trinity River	
Pesticides No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations found in bottom sediments or aquatic life. Waters designated for use as domestic or municipal supply shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in the California Code of Regulations (CCR).		Entire Trinity River	

3.5 Water Quality

TABLE 3.5-2.

Category	Objective Threshold	Applicable Portion of Water Body	
Radioactivity	Radionuclides shall not be present in concentrations which are deleterious to human, plant, animal, or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life. Waters designated for use as domestic or municipal supply shall not contain concentrations of radionuclides in excess of the limits specified in the CCR.	Entire Trinity River	
Sediment The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.		Entire Trinity River	
Settleable material	Water shall not contain substances in concentrations that result in the disposition of material that causes nuisance or adversely affects beneficial uses.	Entire Trinity River	
Suspended material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	Entire Trinity River	
Tastes and odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.	Entire Trinity River	
Temperature	At no time or place shall the temperature of any COLD water be increased by more than 5° F above the natural receiving water temperature. Temperatures will be consistent with those outlined in Table 3.5-3 of this EA/DEIR.	Trinity River subject to Interim Action Plan	
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.	Entire Trinity River	
Turbidity Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.		Entire Trinity River	

Source: Basin Plan (2001)

Two additional documents address specific elements of water quality in the Trinity River basin. The Interim Action Plan for the Trinity River incorporated into the Basin Plan addresses flow and temperature issues in that portion of the river affected by the TRD. The Trinity River Total Maximum Daily Load (TMDL) for Sediment (Regional Water Board 2001) identifies the total load of sediment that can be

delivered to the Trinity River and its tributaries without exceeding water quality standards, based on current flow conditions and estimated flows under the ROD.

Principal components of the TRD include Lewiston Dam, Trinity Dam, and the facilities that divert runoff from the Trinity River watershed to the Sacramento River basin. Construction of the dams and diversion facilities has diverted up to 90 percent of the natural flows of the Trinity River since 1964 and has substantially altered the river's temperature regime. Additional information on this topic is provided in Section 3.4, Water Resources, and Section 3.6, Fisheries.

Trinity River Water Quality

The releases from the TRD influence flow volumes and velocities, water quality, and channel geometry downstream of Lewiston Dam. These influences are particularly important to water quality parameters such as temperature, turbidity, and suspended sediments. Toxicity concerns in the Trinity River center around acid mine drainage from abandoned mines and past mining activities, sediment release from subdivision development and eroded roads in areas with unstable soils and decomposed granite, septic tank use, aboveground and underground tanks, and lumber mills (Regional Water Board 2004). The beneficial uses associated with coldwater fish habitat are currently impaired in the Trinity River basin.

Disturbance is a natural part of the riverine ecosystem that directly influences water quality and, therefore, beneficial uses. The beneficial uses associated with salmonid species are subject to natural fluctuation in response to disturbances. Anthropogenic activities can affect the severity and frequency of these disturbance processes. A dramatic decrease in abundance of Trinity River coldwater fishes has taken place since the TRD began operation (B. Gutermuth, pers. comm. 2003).

Temperature

The influence of Trinity Lake and Lewiston Reservoir on stream conditions diminishes with distance downstream from the TRD. In general, the greater the release volumes from the dams, the less susceptible the river's temperature is to other factors. Releases from the TRD are generally cold (42 to 47 °F). These temperatures are transmitted through Lewiston Reservoir to the Trinity River below Lewiston Dam.

The Interim Action Plan defines temperature objectives that apply to the Trinity River. Temperature objectives are effective from July 1 through December 31 for the reach between Lewiston Dam and the North Fork Trinity River. Table 3.5-3 lists these objectives, although the Basin Plan also stipulates that water released into the Trinity River may be no more than 5 °F warmer than receiving water temperatures.

Temperature Dates		Trinity River Reach		
60 °F (15.6 °C)	July 1 – September 14	Lewiston Dam to Douglas City Bridge		
56 °F (13.3 °C)	September 15 – October 1	Lewiston Dam to Douglas City Bridge		
56 °F (13.3 °C)	October 1 – December 31	Lewiston Dam to confluence with North Fork		

 TABLE 3.5-3.

 TEMPERATURE OBJECTIVES FOR THE TRINITY RIVER (INTERIM ACTION PLAN)

Sediment

The State of California has determined that the Trinity River is impaired under the provisions of Section 303(d) of the Clean Water Act (CWA) due to excessive sediment. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to degradation of anadromous salmonid fish habitat. The State water quality standards consist of designated uses, water quality criteria to protect the uses, and an antidegradation policy.

The TMDL for sediment describes how seasonal variation is considered. Sediment delivery in the Trinity River watershed has considerable inherent inter-annual and seasonal variability. Due to this variability in magnitude, timing, duration, and frequency of sediment input, the TMDL and load allocation apply to the sources of sediment and estimate average sediment input using a 10-year rolling average.

The TMDL does not allocate flow; however, it does take into account critical conditions for flow, sediment loading, and water quality parameters. Restriction of streamflow downstream of the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (U.S. Environmental Protection Agency 2001). Reduction in available coarse sediment upstream of Rush Creek and the significant contribution of fine sediment from Grass Valley Creek have combined to severely affect the sediment flux and particle size distribution in the river. These effects are observable downstream as far as the North Fork, below Pear Tree Gulch.

Mercury in the Trinity River

Another source of potential water quality impairment of the Trinity River is the presence of mercury, although the river is not listed under Section 303(d) of the CWA for mercury impairment. The general significance of mercury as a biological toxin, and the likely sources of mercury in regional and local contexts, is discussed in Section 3.15, Hazards and Hazardous Materials. Elevated concentrations of mercury have been found in water, sediment, and biota (fish, frogs, and predatory aquatic insects) in the upper Trinity River basin (U.S. Geological Survey, unpublished data). Biological samples taken in the lower Trinity River system have not yielded significantly elevated levels of mercury in biota from various tropic levels to date; however, studies that focus on the river downstream of the TRD and specifically on the proposed rehabilitation sites and vicinity are ongoing (Ashley et al. 2002).

Initially, the TRRP recognized the possibility of mercury release from tailings and/or fluvial fine sediments that could be disturbed and mobilized by rehabilitation activities. Subsequently, on-going investigations and monitoring at the Hocker Flat Demonstration Project suggested that the alluvial

materials that are subject to disturbance (project related) contain levels of mercury well below the numeric criteria promulgated by the EPA for priority toxic pollutants or the narrative threshold. This threshold states that toxic substances should not be in such concentrations that produce detrimental physiological responses in humans or aquatic life. Under the California Toxics Rule, the numeric water quality objectives for total measured mercury are 0.050 parts per billion, unfiltered for water.

Alluvial materials deposited at Hocker Flat in the 1997 floods are relatively thin and have mercury and methylmercury concentrations comparable to values in other USGS sample sites on the Trinity River. Gravels present below this sand unit consist of stacker cobble tailings, most of which have been reworked in post-mining flood events. Locally, sluice sands with elevated mercury concentrations are present within the stacker cobble tailings. Mercury concentrations within riparian berm sediment are generally low but may have localized methylmercury concentrations that are higher.

Under low flow conditions, mercury and methylmercury concentrations are relatively low in Trinity River and tributary waters but generally higher than water from Lewiston Reservoir as measured at the Lewiston gage. Mercury concentration in Trinity River water increases as flows increase, but even at the highest flows, the concentration of mercury is relatively low. Mercury concentration in Trinity River water increases downstream from the Lewiston gage at a given flow regime and is the highest just below the Hocker Flat project area.

Methylmercury concentrations in biological samples collected from the Hocker Flat area in April 2003 and 2004 were similar to background concentrations previously observed within the Trinity watershed. Dragonfly samples collected from seven Hocker Flat sites have methylmercury concentrations that range from 0.011 to 0.063 ppm (parts per million; $\mu g/g$). Dragonflies collected from ponds had methylmercury concentrations similar to those from river sites. Other biota sampled, including amphibians and fish, show similar relationships. While concentrations of mercury suggest some variability in the alluvial materials at Hocker Flat, NOAA Fisheries' assessment of site-specific methylation data suggests that the bio-availability of mercury is not presently high at the Hocker Flat site.

3.5.2 REGULATORY FRAMEWORK

U.S. Environmental Protection Agency

California Toxics Rule

The EPA has promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions to be applied to waters in the State of California, known as the California Toxics Rule (CTR). EPA promulgated this rule based on the Administrator's determination that the numeric criteria are necessary in the State of California to protect human health and the environment. EPA promulgated this rule to fill a gap in California water quality standards that was created in 1994 when a State court overturned the State's water quality control plans containing water quality criteria for priority toxic pollutants. Under Section 303(c)(2)(B) of the CWA, states must adopt numeric criteria for the priority toxic pollutants listed under Section 307(a) if those pollutants could be reasonably expected to interfere with the designated uses of States' waters. In April 1991, California adopted numeric criteria for

3.5 Water Quality

priority toxic pollutants in the Inland Surface Water Plans and Enclosed Bays and Estuaries Plans. In 1994, a California State court ordered California to rescind these water quality control plans. Thus, the State of California was without numeric water quality criteria for many priority toxic pollutants as required by the CWA, necessitating this action by EPA. These federal criteria are legally applicable in the State of California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA. The final rule promulgated numeric water quality criteria to replace the criteria that were rescinded by the State court. California also remains under the National Toxics Rule promulgated in 1992 for certain waters and pollutants (U.S. Environmental Protection Agency 2004, http://www.epa.gov/ost/standards/ctr/factsheet.html).

The CTR is set forth in the Federal Register (40 CFR 131, 2000;

http://www.epa.gov/ost/standards/ctr/toxic.pdf). It establishes human health criteria for mercury in the water column of 0.050 parts per billion (ppb) of total recoverable mercury for drinking water supplies and aquatic organisms, and 0.051 ppb for waters that are not drinking water supplies. These criteria are derived from a calculated reference dose, based on concentrations of mercury below which extra risk for neurological damage should not occur.

National Recommended Water Quality Criteria

EPA has issued national recommended water quality criteria for the protection of aquatic life and human health for approximately 150 pollutants (U.S. Environmental Protection Agency 2004, http://www.epa.gov/waterscience/pc/revcom.pdf). These criteria are published pursuant to Section 304(a) of the CWA and provide guidance for states and tribes to use in adopting water quality standards under Section 303(c) of the CWA. In 2001, EPA announced the availability of a recommended water quality criterion for methylmercury (66 FR 1344). At that time, EPA withdrew its previous ambient human health water quality criteria for mercury as the recommended Section 304(a) water quality criteria. (These criteria were the same as those set forth in the CTR as described above.) The new water quality criterion describes the concentration of methylmercury in freshwater and estuarine fish and shellfish tissue that should not be exceeded to protect consumers of fish and shellfish among the general population. This concentration is set at 0.3 parts per million (ppm). EPA expects the criterion recommendation to be used as guidance by states, tribes, and EPA in establishing or updating water quality standards for waters of the United States and in issuing fish and shellfish consumption advisories. This is the first time EPA has issued a water quality criterion expressed as a fish and shellfish tissue value rather than as a water column value. This approach is a direct consequence of the scientific consensus that consumption of contaminated fish and shellfish is the primary human route of exposure to methylmercury.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Act) directs the Regional Water Board to formulate and adopt a Basin Plan for all areas within the region. The Act requires the Regional Water Board to establish water quality objectives in the Basin Plan as in its judgment will ensure the reasonable protection of

beneficial uses and the prevention of nuisance. Factors to be considered by the Regional Water Board in establishing water quality objectives shall include, but not necessarily be limited to the following:

- past, present, and probable future beneficial uses;
- environmental characteristics of the hydrographic unit under consideration, including the quality of the water available thereto;
- water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
- economic considerations;
- the need for developing housing within the region; and
- the need to develop and use recycled water.

California Regional Water Quality Control Board

The Regional Water Board requires that a project proponent apply for and obtain a CWA Section 401 Water Quality Certification (WQC) for any project that requires a CWA Section 404 permit from the U.S. Army Corps of Engineers (Corps). Since the Proposed Action and Alternative 1 would have the potential to affect water quality in the Trinity River, the Regional Water Board is likely to impose water quality limitations and project conditions through issuance of waste discharge requirements or Section 401 Certification. Reclamation will prepare and submit to the Regional Water Board an application for Section 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill). The application will be submitted to the Regional Water Board when the pre-construction notification is sent to the Corps.

The Regional Water Board controls the discharge of wastes to surface waters through the National Pollutant Discharge Elimination System (NPDES) permit process. Waste Discharge Requirements are established in NPDES permits to protect beneficial uses. An NPDES General Permit for Storm Water Discharges Associated with Construction Activities (General Permit) is required for the Proposed Action and Alternative 1. The General Permit requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and to describe and ensure the implementation of Best Management Practices (BMPs) to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges.

California Office of Environmental Health Hazard Assessment

If elevated levels of mercury are found to occur in fish species that are commonly considered sport fish, the California Office of Environmental Health Hazard Assessment (OEHHA) will issue a health advisory recommending safe consumption levels for possibly contaminated fish. Safe consumption limits for fish of various species from various localities with known toxic contamination hazards are listed by the

3.5 Water Quality

OEHHA (<u>http://www.oehha.ca.gov/fish/general/99fish.html</u>). If risks from consumption of contaminated fish are judged to be high, people are advised to consume no fish from those areas. Mercury toxicity poses higher risks to pregnant or nursing women and to children under age six, so warnings may be specifically addressed to these population groups.

Human health water quality criteria are numeric values that EPA believes will protect human health for pollutant concentrations in ambient waters and edible tissue. Because consumption of contaminated fish tissue is the primary route of human exposure to methylmercury, EPA expresses this water quality criterion as a fish tissue value rather than as a water column value. The EPA human health fish tissue residue water quality criterion for concentrations of methylmercury in fish tissue is 0.3 milligrams methylmercury/kilogram fish (parts-per-million [ppm]) wet weight. The Food and Drug Administration (FDA) action level for commercial fish is 1.0 ppm. In 2003, the FDA revised its fish consumption advisory to equal the EPA standard. Black bass were collected from Trinity Lake in the Upper Trinity River watershed that exceeded these thresholds (May et al. 2002). It is thought that the inactive Altoona Mercury mine, which drains into the East Fork Trinity River above Trinity Lake, is a significant contributor of mercury to the lake.

In addition, a preliminary investigation of Trinity Lake and several streams and ponds upstream has revealed elevated levels of mercury in certain fish populations. As part of an on-going investigation of mercury impacts from historic gold and mercury mining in the Trinity River watershed, the United States Geological Survey (USGS) has conducted a screening study of mercury concentrations in several fish species. While the mercury levels found are sufficient to warrant a Health Notification, the fish sample group in individual water bodies is limited and more study is needed (Office of Environmental Health Hazard Assessment 2005).

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements including land use, open space, transportation/circulation, housing, safety, noise, and conservation. No goals and policies relative to water quality issues specific to TRRP activities were identified in the General Plan (Trinity County 2001). The General Plan includes the Junction City Community Plan (1987).

Trinity County Water Quality Control Ordinance

The Trinity County Water Quality Control Ordinance establishes the necessity of ensuring the water quality of watersheds and water supply areas in Trinity County and dictates that "no use, application, discharge, disposal of any polluting substance or any other controllable water quality activities may be initiated, undertaken, or maintained by any person if said use or activity results in a detectable discharge of polluting substances into waters of the state located in or flowing through the county" (Ordinance #1072, County Code Section 8.60.010-8.6-020).

Project Consistency with the Trinity County General Plan and Community Plans

This section compares the goals and objectives of the Proposed Action to the relevant local planning policies (i.e., Trinity County General Plan, Junction City Community Plan) to determine if there are any inconsistencies.

The goals and objectives described in Chapter 1 are generally compatible with the applicable General Plan goals and policies summarized above. The overall goal of either the Proposed Action or Alternative 1 is to rehabilitate the sites so that they function in a manner that is closer to historic conditions (e.g., pre-Lewiston Dam).

3.5.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

Impacts on water quality were determined by analyzing whether the proposed modification of the physical features and biological conditions at the rehabilitation sites would comply with Basin Plan objectives for the Trinity River.

Significance Criteria

The proposed project would result in significant adverse impacts if it would result in any of the following:

- Violations of state or federal numerical water quality standards or state or federal narrative water quality objectives for construction activities;
- Substantial degradation of water quality, such that existing beneficial uses are precluded specifically because of adverse water quality;
- Violation of any waste discharge requirements and/or Section 401 Certification conditions;
- Substantial alterations of the course of a stream or river in a manner that would result in substantial erosion or siltation onsite or offsite;
- Short-term or long-term increases in turbidity of 20 percent or more over naturally occurring background levels; or
- Violation of site-specific temperature objectives for the Trinity River contained in the *Water Quality Control Plan for the North Coast Region* (NCRWQCB 1993, as amended) and included as Table 3.5-3 of this section.

Impacts and Mitigation Measures

Table 3.5-4 summarizes the potential water quality impacts resulting from construction and operation of the project.

3.5 Water Quality

TABLE 3.5-4.

SUMMARY OF WATER QUALITY IMPACTS FOR THE NO-ACTION ALTERNATIVE, THE PROPOSED ACTION, AND ALTERNATIVE 1

	Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
1.	Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels during construction.	All sites	NI	S	S	LS	LS
2.	Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels following construction.	All sites	NI	S	S	LS	LS
3.	Construction of the project could potentially cause contamination of the Trinity River from hazardous materials spills.	All sites	NI	S	S	LS	LS
4.	Construction and maintenance of the project could result in increased stormwater runoff and subsequent potential for erosion.	All sites	NI	LS	LS	N/A ¹	N/A ¹
5.	Construction and maintenance of the project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan.	All sites	NI	S	S	LS	LS

Notes: LS

= Less than Significant S = Significant SU = Significa = No Impact B = Beneficial N/A = Not App

Significant Unavoidable

NI = No Impact B = Beneficial N/A = Not Applicable ¹Because this potential impact is less than significant, no mitigation is required.

All Sites (Conner Creek, Valdor Gulch, Elkhorn, and Pear Tree Gulch)

Impact 3.5-1: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels during construction. No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the project would not be constructed; therefore, no construction-related short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action

Implementing the Proposed Action would increase turbidity and total suspended solids during the activities described in Chapter 2. During river's edge construction activities, potential increases in turbidity levels could occur as a result of excavation of riparian sediments and elevated floodplain materials, removal of riparian plant root systems, and re-shaping of the contours of the riverbanks. Fine sediments may be suspended in the river for several hours following construction activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of construction zones, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction zone.

River's edge construction activities will be staged to minimize potential turbidity effects. These shoreline construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially violate the Basin Plan objectives for turbidity in the Trinity River. Short-term increases in turbidity and suspended solids levels would be a significant impact.

Alternative 1

Temporary increases in turbidity or total suspended solids levels associated with construction of Alternative 1 would likely be less than under the Proposed Action, since less excavation and redistribution of alluvial materials would occur at the Conner Creek and Elkhorn sites.

Similar to the Proposed Action, activities within riverine areas would be staged to minimize potential turbidity effects. These activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially violate the Basin Plan objectives for turbidity in the Trinity River. Short-term increases in turbidity and suspended solids levels during construction would be a significant impact.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action and Alternative 1

- **1a:** Turbidity increases associated with activities shall not exceed the water quality objectives for turbidity in the Trinity River basin. Turbidity levels are defined in nephelometric turbidity units (NTUs). The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (2001), is summarized below.
 - Turbidity shall not be increased by more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.
- **1b:** To ensure that turbidity levels do not exceed the threshold listed above during river's edge project construction activities, Reclamation or its contractor shall monitor turbidity levels 50 feet upstream and 500 feet downstream of the point of river's edge construction activities. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during periods of increased turbidity.
- 1c: Reclamation or its contractor shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project including silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities shall be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All BMPs and sediment and erosion control devices will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: Less than Significant.

Impact 3.5-2: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels following construction. No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the proposed project would not be constructed; therefore, no postconstruction short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action

Implementing the Proposed Action could increase turbidity and total suspended solids in the river and on the floodplain following construction. Following construction activities, potential increases in turbidity levels could occur when newly excavated devegetated areas are exposed to rainsplash erosion and runoff, or erosion by elevated river stages if flows increase in the river. Fine sediments may be suspended in the river for several hours following such exposure and erosion. The extent of downstream sedimentation would be a function of the rainfall intensity and/or instream flow velocity, as well as the particle size of exposed sediments. Lower intensity rainfalls would be less likely to mobilize fine sediments. Similarly, if fine sediments are mobilized by streamflow over newly exposed streambank areas, they could be

carried several thousand feet downstream of the construction zones, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction zone.

Post-construction exposure of sediments to rainfall and/or flows could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the Basin Plan turbidity objective for the Trinity River. A short-term increase in turbidity and suspended solids levels following construction would be a significant impact.

Alternative 1

Temporary increases in turbidity or total suspended solids levels associated with construction of Alternative 1 would likely be similar in nature, but at lower levels than under the Proposed Action in terms of area disturbed and the volume of excavation. A short-term increase in turbidity and suspended solids levels following construction would be a significant impact.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action and Alternative 1

- **2a:** Turbidity increases following project construction activities shall not exceed the water quality objectives for turbidity in the Trinity River basin. Turbidity levels are defined in nephelometric turbidity units (NTUs). The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (2001), is summarized below.
 - Turbidity shall not be increased by more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.
- **2b:** To ensure that turbidity levels do not exceed the threshold listed above during river's edge project construction activities, Reclamation or its contractor shall monitor turbidity levels 50 feet upstream and 500 feet downstream of the point of river's edge construction activities. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every 2 hours during periods of increased turbidity.
- **2c:** Reclamation or its contractor shall prepare and implement a SWPPP that includes silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities shall be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that the devices are functioning properly. Any erosion control devices found to be nonfunctional must be repaired or replaced following their discovery or by the end of the work day if rain is imminent or if the National Weather Service has forecast a greater than 50 percent possibility of rain within the following 24 hours. In those cases where,

for safety reasons, repairs cannot be made immediately, they should be completed as soon as the work can safely be performed. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: Less than Significant

Impact 3.5-3: Construction of the project could cause contamination of the Trinity River from hazardous materials spills. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, the project would not be constructed; therefore, no construction-related contamination of the Trinity River from hazardous materials spills would occur.

Proposed Action and Alternative 1

Construction staging activities could result in a spill of hazardous materials (e.g., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river would increase the risk of a spill of hazardous materials into the river (e.g., leaking of fluids from construction equipment). Potential spills of hazardous materials into or adjacent to the Trinity River could degrade water quality within the Trinity River and have deleterious effects on salmonids of any life stage in close proximity to construction activities. Section 3.15, Hazardous Materials, evaluates potential effects associated with exposing the public to hazards associated with the transportation and use of hazardous materials at the site. Construction activities could result in a spill of hazardous material, which would be a significant impact.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action and Alternative 1

- **3a:** Reclamation shall require that the contractor prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.
- **3b:** Reclamation shall include in the construction contract documents a requirement that any construction equipment that would come in contact with the Trinity River will need to be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.
- **3c:** Reclamation shall include in the construction contract documents a requirement that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel. In addition, the construction contractor shall be

responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Significance after Mitigation: Less than Significant

Impact 3.5-4: Construction of the project could result in increased stormwater runoff and subsequent potential for erosion. *No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, the proposed project would not be constructed; therefore stormwater runoff and the subsequent potential for erosion would not increase.

Proposed Action and Alternative 1

Implementation of either the Proposed Action or Alternative 1 would not result in an increase in impervious surface areas (e.g., structure and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion. The impact associated with runoff and erosion would be less than significant.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-5: Construction and maintenance of the project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1

No-Action Alternative

Under the No-Action Alternative, the project would not be constructed therefore, no degradation of Trinity River beneficial uses identified in the Basin Plan would occur.

Proposed Action and Alternative 1

Under the Proposed Action, significant impacts to beneficial uses of the Trinity River could occur in the following categories of water quality objectives listed in the Basin Plan:

- sediment
- toxicity
- turbidity
- settleable material

- suspended material
- chemical constituents

The magnitude of these impacts under Alternative 1 would be less than under the Proposed Action, due to the lower magnitude of disturbance to the riverine activity areas at Conner Creek and Elkhorn.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

The significance of sediment, settleable materials, suspended materials, and turbidity impacts, as well as recommended mitigation measures are addressed under Impacts 3.5.1 and 3.5.2. The significance of and mitigation for chemical constituents and toxicity impacts are addressed under Impact 3.5.3.

Significance after Mitigation: Sediment, turbidity, settleable material, suspended material, and toxicity and chemical constituents - No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1

3.6 Fishery Resources

Fishery resources include fish populations, their habitats, and the harvest of those populations. This section discusses the existing environment of the Trinity River basin in both a regional and site-specific context with regard to native anadromous and resident fish and non-native fish. Information on other biological resources is provided in Section 3.7, Vegetation, Wildlife, and Wetlands.

The USFWS has determined that the lack of sufficient rearing habitat for juvenile salmonids is likely a primary factor in limiting the recovery of salmonid populations in the Trinity River (U.S. Fish and Wildlife Service and Hoopa Valley Tribe 1999) The Proposed Action is specifically designed to increase the abundance of rearing habitat for Trinity River juvenile salmonids by reconnecting the river with its floodplain at four specific sites.

3.6.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Regional Setting

Native Anadromous Fish Species

The native anadromous salmonid species of interest in the mainstem Trinity River and its tributaries are Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), and steelhead (*Oncorhynchus mykiss irideus*). Of the three species, there are two spawning races of Chinook salmon (spring- and fall-run) and two spawning races of steelhead (winter- and summer-run). The life histories and fresh water habitat requirements of these species and their distinct spawning populations are described in Appendix H.

All anadromous species begin their life in fresh water, migrate to the ocean to rear and mature, and return to spawn in fresh water. Although the three species have generally similar life histories, they differ in the time of year they migrate and spawn, as well as when egg incubation typically occurs (Figure 3.6-1).

Adequate flows, temperatures, water depths, and velocities; appropriate spawning and rearing substrates (e.g., riverbed gravels); and availability of instream cover and food are critical for the production of all anadromous salmonids. Spring-run Chinook salmon and summer-run steelhead also need long-term adult holding habitat in which pool size and depth, temperature, cover, and proximity to spawning gravel are important requirements. Newly emerged fry and juveniles of all species require rearing habitat with low velocities, open cobble substrate, and cool water temperatures. Emigration of smolts to the ocean and the immigration of spawning adults require adequately timed flows with the appropriate temperature, depth, and velocity.

Native non-salmonid anadromous species that inhabit the Trinity River basin include green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), and Pacific lamprey (*Lampetra tridentata*). These fish spend their early life stages in fresh water, migrate to the ocean for maturation, and return to their natal streams to spawn. Appendix H provides additional information on these species and their life stages. Information on native non-salmonid anadromous species residing in the Trinity River basin is very limited. However, the Klamath/Trinity River basin is known to contain the largest
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Adult	Chinook Spring-run Fall-run				[]]]		////	1111	 	 	///	////	
Migration and Holding	Coho									•••••			••••
	Steelhead Summer-run Fall-run Winter-run Half pounders				<u>NASIE</u>		<u>// 2 </u>						
	Chinook Spring-run Fall-run											 	
Spawning	Coho											•••••	
	Steelhead All runs												
	Chinook	////	///.								////	[[]]	[[]]
Egg Incubation	Coho		• • • •	••••	••••							••••	••••
incubation	Steelhead					<u> </u>	八万						
	Chinook	///	////	///									
Fry Fmergence	Coho			••••	• • • • •								
Lineigenee	Steelhead												
	Chinook		[///	///	////	////	[[]	////	////	///			
Juvenille Rearing	Coho age 0 age 1	•••••		·····	•••••	•••••		•••••			••••	•.•.•.	
	Steelhead age 0 age 1, age 2												
Smalt Out	Chinook			///	////	111	////	////	////	///	////]	
Migration	Coho		• • • •	• • • •									
	Steelhead												
				-									

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

spawning population of green sturgeon in California (Moyle 2002). In contrast, only a small run of white sturgeon is thought to occur.

Trinity River Restoration Program Goals

The 1983 EIS on the Trinity River Basin Fish and Wildlife Management Program (U.S. Fish and Wildlife Service 1983) documented the in-river spawner escapement goals and the Trinity River Salmon and Steelhead Hatchery (TRSSH) production goals developed by the CDFG. These spawner escapement goals were subsequently adopted by the TRRP. The in-river goals represent the total number of naturally produced adult spawners (excluding jacks) for the Trinity River basin below Lewiston Dam and exclude fish caught by the fisheries (Table 3.6-1). The hatchery goals represent numbers of adult fish needed by the hatchery, exclusive of fisheries for Chinook and coho salmon. An undefined in-river harvest is included in the restoration program goals for steelhead.

Species	In-river Spawner Goals	Hatchery Goals	Total
Fall-run Chinook	62,000	9,000	71,000
Spring-run Chinook	6,000	3,000	9,000
Coho	1,400	2,100	3,500
Steelhead	40,000	10,000	50,000

TABLE 3.6-1

TRINITY RIVER	RESTORATION	PROGRAM	SPAWNER	ESCAPEMENT	GOALS

Source: U.S. Fish and Wildlife Service et al. 2000

In-river spawner escapement is the number of fish returning to spawning grounds, which consists of two subgroups: naturally produced fish and hatchery-produced fish. However, hatchery-produced fish are not considered to contribute toward the in-river spawner escapement goals of the TRRP, although their offspring do (i.e., if hatchery-produced fish spawn in-river and their offspring survive to return to spawn, these offspring are naturally produced by definition). The best available data indicate that large numbers of hatchery-produced fish spawn in-river. Typically, more fish spawn in-river than are spawned at the hatchery, and fewer emergent fry survive to return as adults. Assuming that hatchery- and naturally produced fish are subject to the same environmental conditions after the hatchery releases its fish (typically as smolts), the relatively low returns of naturally produced fish are indicative of lower survival rates of early fresh water life stages (i.e., eggs, fry, and/or juvenile fish), compared to hatchery-reared fish. This indicates that the quality or availability of rearing habitat is limiting the population.

Fall-Run Chinook Salmon Population

Average *in-river escapement of naturally produced fish* was calculated by averaging CDFG annual inriver spawner escapement above Willow Creek weir (with the exception of spring-run Chinook salmon that were estimated above Junction City weir) for the given years of data (excluding Grilse) multiplied by the percentage of that population estimated to be "natural spawners" reported in the Trinity River Mainstem Fishery Restoration EIS/EIR (CH2MHill 2000). 3.6 Fishery Resources

Although annual pre-dam escapement data are sporadic, estimates of the number of fall-run Chinook salmon adults in the Trinity River prior to 1964 above the North Fork ranged from 19,000 to 75,600 and averaged 45,600 for the 5 years of available data. Comparisons between pre- and post-dam averages are difficult because (1) few pre-dam estimates exist; (2) pre-dam estimates typically represent fish spawning in the river above the North Fork, while post-dam estimates are above Willow Creek; and (3) post-dam estimates are only for the river below Lewiston Dam and are confounded by large numbers of hatchery-produced fish that spawn in natural areas (recent changes have been enacted to reduce competition of hatchery-produced fish with naturally produced spawners). Comparisons between pre-dam escapements and the TRRP in-river spawner escapement goals are not equitable because the in-river goals represent the numbers of fish that could be produced in the entire Trinity River basin below Lewiston Dam once successful restoration is completed, whereas the pre-dam numbers are sporadic and limited to the Trinity River above the North Fork (Table 3.6-2).

TABLE 3.6-2

COMPARISON OF TRRP IN-RIVER SPAWNER ESCAPEMENT GOALS TO AVERAGE NUMBERS OF NATURALLY PRODUCED FISH

Species	TRRP In-river Spawner Escapement Goals	Average In-river Escapement of Naturally Produced Fish*	Years of Available Data	Percent of TRRP Goal Met
Fall-run Chinook	62,000	12,140	1982–2004	20
Spring-run Chinook	6,000	4,193	1982–2003	70
Coho	1,400	285	1982-2003	20
Steelhead	40,000	2,710	1992–1996/ 2002–2003	7

Source: U.S. Fish and Wildlife Service et al. 2000, (Sinnen 2005) California Department of Fish and Game unpublished data.

Yearly estimates of fall-run Chinook salmon runs in the Trinity River basin have been made by CDFG since 1978 as a part of the Klamath Basin Fall Chinook Salmon Spawning Escapement Estimate. CDFG's post-dam in-river spawner escapement estimates for the Trinity River basin upstream of the Willow Creek weir from 1982 through 2004 averaged 31,226 (adult and Grisle) fall-run Chinook salmon, with an additional average TRH spawner escapement of 11,562 (Figure 3.6-2).

Spring-Run Chinook Salmon Populations

Fisheries investigations conducted from 1942 through 1946, which was prior to the construction of the Trinity and Lewiston dams, identified spring-run Chinook salmon populations in the Trinity River above the North Fork Trinity River confluence (Moffett and Smith 1950). In 1955, an in-river spawner escapement estimate of 3,000 spring-run Chinook salmon upstream of Lewiston was reported by CDFG (U.S. Fish and Wildlife Service et al. 2000). Escapement surveys for the years 1982 through 2000 (excluding 1983 and 1995 because surveys were not conducted in those years) indicate that an average of 65 percent of the in-river spawner escapement of Trinity River spring-run Chinook salmon was hatchery produced. Conversely, only 35 percent were naturally produced. For the years 1982-2003 (excluding 1983 and 1995 as noted above) the Trinity River below Lewiston Dam produced an average of 4,193



3.6 Fishery Resources

naturally produced spring-run Chinook spawners, which is approximately 70 percent of the TRRP goal of 6,000 naturally produced spring-run Chinook salmon (Table 3.6-2).

Coho Salmon Populations

Trinity River coho salmon populations were historically smaller than Chinook salmon populations. Predam estimates for coho salmon spawning above Lewiston were 5,000 fish (U.S. Fish and Wildlife Service et al. 2000) Access to high-quality habitat with year-round cold, clear flows for coho salmon was blocked by construction of the TRD (U.S. Fish and Wildlife Service and Hoopa Valley Tribe 1999). Because coho salmon generally rear for at least one full year in freshwater, seasonally warm water temperatures occurring in much of the mainstem Trinity River during summer prior to TRD construction limited mainstem coho production in downstream reaches (Moffett and Smith 1950). Total run size for Trinity River coho salmon below Lewiston Dam from 1973 through 1980 averaged 3,300 adults (U.S. Fish and Wildlife Service et al. 2000a). This estimate includes hatchery production. The most recent estimates for coho salmon spawning in the Trinity River upstream of the Willow Creek weir (1991-1995) indicate that naturally produced coho salmon average 200 fish, ranging from 0 to 14 percent of the total annual escapement (an annual average of 3 percent). Current estimates for coho salmon spawning in the Trinity River upstream of the Willow Creek weir (1982–2003) indicate that naturally produced coho salmon average about 285 fish, which is approximately 20 percent of the TRRP goal of 1,400 (Table 3.6-2).

The majority of coho salmon spawning in the Trinity River are produced by the hatchery, and, based on the levels of in-river naturally producing coho salmon, NOAA Fisheries has concluded that (1) current coho salmon runs are largely composed of hatchery-produced adults; (2) the remaining naturally produced stocks are, and have been, heavily influenced by hatcheries (such as from occasional inter-basin stock transfers), and virtually all of the naturally spawning coho salmon in the Trinity River, particularly, are first generation hatchery fish; and (3) the remaining natural coho salmon populations in the Klamath/Trinity River system are likely incapable of sustaining themselves (National Marine Fisheries Service 1997).

Steelhead

Adult summer-run steelhead hold primarily in the headwaters of mainstem Trinity tributaries during the summer months and spawn in the following late winter/early spring. Some Trinity River steelhead return to the river 4 to 6 months after first emigrating to the ocean. Upon their return, these fish, known as "half-pounders," feed in the river but do not spawn. They subsequently return to the ocean before returning to spawn. When in the "half-pounder" phase, these fish are not counted as part of the escapement, but they are important to the sport fishery.

Pre-dam winter-run steelhead spawner escapements in the Trinity River and its tributaries upstream of Lewiston have been estimated to range from 6,900 to 24,000 adults. From 1992 through 1996 and again for years 2002 and 2003, the California Department of Fish and Game estimated run sizes for wild and hatchery-produced steelhead upstream of Willow Creek weir. The estimated total escapement of the naturally produced fall/early winter portion of the winter-run steelhead escapement upstream of the Willow Creek weir averaged 2,710 fish (surveys from fall and early winter period only). This average

represents approximately 7 percent of the TRRP in-river spawner escapement goal of 40,000 adult steelhead (Table 3.6-2). Estimates for the remaining winter portion of the escapement are unavailable because winter river flows render fish-counting weirs inoperable.

Pre-dam summer-run steelhead spawner escapements for the Trinity River upstream of Lewiston were estimated to average 8,000 adults annually. Recent (1985–2002) post-dam CDFG/USFS estimates have ranged from 20 to 2,575 adult summer-run steelhead returning to the mainstem Trinity River and tributaries (California Department of Fish and Game 1997, unpublished data; U.S. Forest Service 2002, unpublished data). The TRRP escapement goals do not establish specific targets for summer-run steelhead in the Trinity River, nor does the TRSSH mitigate specifically for summer-run steelhead.

Trinity River Salmon and Steelhead Hatchery

The TRSSH is operated by CDFG and funded by Reclamation to mitigate for the loss of salmonid production resulting from the TRD above Lewiston Dam. Concerns regarding the potential impacts of hatchery operations on naturally produced populations of the Klamath River basin (including the Trinity River) prompted the CDFG to institute new hatchery operations in 1996 to minimize future impacts. Additionally, further review of hatchery operations conducted during 1999 and 2000 resulted in recommendations for (1) periodic evaluation of coho salmon production levels required to support recovery of Southern Oregon/Northern California Coast Evolutionarily Significant Unit (SONCC ESU) coho salmon, and (2) evaluation of spawning and brood stock selection practices for maintaining genetic separation of spring- and fall-run Chinook salmon (California Department of Fish and Game and National Marine Fisheries Service 2001).

Fish Harvest

The harvest of Klamath River basin (including the Trinity River basin) fall-run Chinook salmon is managed jointly by the CDFG, Oregon Department of Fish and Wildlife, California Fish and Game Commission, Yurok Tribe, HVT, NOAA Fisheries, and U.S. Bureau of Indian Affairs (BIA). The Pacific Fishery Management Council (PFMC) and the Klamath Fishery Management Council (KFMC) are allocation forums for the ocean and ocean/in-river fisheries, respectively. The mixed-stock ocean population is harvested by commercial and sport fisheries, and the in-river population is harvested by tribal (ceremonial, subsistence, and commercial) and sport fisheries. Chinook salmon harvest (both fallrun and spring-run) includes both naturally produced and hatchery-produced fish. Commercial and sport harvest of coho salmon has been incrementally restricted in California ocean and inland waters since 1994, resulting in statewide harvest prohibitions within the last 5 years, including barbless hooks and "catch and release only." Steelhead is rarely caught in the ocean commercial and sport fisheries, but is harvested by the in-river tribal and sport fisheries. Historically, Klamath/Trinity River Chinook and coho salmon populations have been harvested in the ocean from Santa Barbara County, California, to the Oregon/Washington border. Ocean harvest of naturally produced salmon may have been sufficient in the late 1970s to cause declines in Klamath River basin (including Trinity River) populations, but, based on the best available data, fall-run Chinook salmon harvest management restrictions implemented since 1986 have decreased harvest impacts to levels believed to be sustainable.

Habitat Conditions

Construction and operation of the TRD, combined with watershed erosion, large-scale gold dredging, and other human-caused disturbances, have resulted in major changes in habitat conditions in the Trinity River. Factors that have resulted in adverse effects on fish habitat include

- obstruction to river reaches upstream of the TRD (Lewiston Dam);
- changes to quantity and timing of flows;
- changes in channel geomorphology;
- changes in substrate composition caused by the addition of fine sediments and restriction of gravel recruitment; and
- changes in water temperature.

These factors are addressed in other sections of this EA/DEIR, specifically Section 3.3, Geology, Fluvial Geomorphology, and Soils; Section 3.4, Water Resources; and Section 3.5, Water Quality. The relationship between these factors and fish are summarized in the following paragraphs.

The TRD dams blocked access to 59 miles of Chinook salmon habitat, 109 miles of steelhead habitat, and an undetermined amount of coho salmon habitat (U.S. Fish and Wildlife Service 1994). Much of this habitat is thought to have been prime spawning and rearing habitat. In the case of the Chinook salmon, it represented about 50 percent of the suitable spawning habitat in the upper Trinity River basin. As early as 1980, the overall decline in spawning habitat was estimated at 80 to 90 percent (U.S. Fish and Wildlife Service 1980). Furthermore, the blocking of salmon access to upstream reaches greatly reduced the diversity of habitats available to salmon in the Trinity River.

For the first 21 years of TRD operations (1964 to 1985), Lewiston Dam releases to the Trinity River averaged only 21 percent of the natural river inflow. The reduction in flows led to a reduction in habitat and declining quality in remaining habitat. For example, spawning habitat losses in the mainstem Trinity River below the Grass Valley Creek confluence have been estimated to be 80 percent in the first 2 miles and up to 50 percent overall in the 6 miles downstream of that confluence (U.S. Fish and Wildlife Service 1994).

The altered patterns of fluvial geomorphic processes in the upper Trinity River have resulted in a reduction in the number of alternate bar sequences with a resultant change in substrate quality. Important salmonid habitats associated with alternate bars include pools that provide cover from predators and cool resting places for juveniles and adults; gravelly riffles where adults typically spawn; open gravel/cobble bars that create shallow, low-velocity zones important for emerging fry; and slack-water habitats for rearing juveniles.

Changes in substrate composition occur in conjunction with upland and riverine processes. The construction and operation of the TRD has modified the sediment regime of the Trinity River below Lewiston Dam. Fine sediment fills in spaces between gravels and cobbles, which impedes water percolation through the river substrates, degrading and reducing available spawning habitats.

Sedimentation of spawning areas can impede intragravel flow (which is important for delivering oxygen and carrying away metabolic waste products) to incubating eggs, as well as create an impenetrable barrier that prevents the emergence of salmon sac-fry from their gravel nest. Accumulation of fine sediments can also decrease the amount of space between gravel and cobble, thereby decreasing the amount of available habitat for over wintering juvenile coho salmon and steelhead that "burrow" into the substrate. Sedimentation may also decrease aquatic invertebrate production and diversity, thereby limiting a primary food source for juvenile salmonids.

The thermal environment of the Trinity River has also changed as a combined result of the construction and operation of the TRD and the subsequently altered geomorphic patterns of the river downstream. The dams blocked access to the upstream river reaches that are dominated by snowmelt runoff and remain cool throughout the year. Prior to the dam, these areas provided important juvenile rearing and adult holding habitats for salmonids when the majority of the lower mainstem habitats (i.e., below Lewiston Dam) had likely become too warm. The upstream tributaries contributed snowmelt runoff and cool temperatures throughout the spring and early summer that aided smolt emigration through much of the mainstem. Because the upper river's high-elevation habitats are now blocked by the TRD and much of the snowmelt is retained in the TRD reservoirs, it is necessary to maintain artificially cooler temperatures below the dam than existed prior to the dam. In other words, the mainstem below the dam must now function thermally like the upstream reaches and tributaries for anadromous salmonids.

Habitat Restoration Projects

Since the early 1980s, the Trinity River Basin Fish and Wildlife Restoration Program has conducted a variety of restoration activities in the mainstem Trinity River and its tributaries. These activities include watershed rehabilitation and habitat enhancement work within the tributaries, and dam construction and channel dredging in Grass Valley Creek to decrease the amount of fine sediment entering the mainstem Trinity River. Restoration activities in the mainstem Trinity River have included spawning gravel supplementation, pool dredging to deepen these habitats and remove fine sediment from the river channel, and construction of several channel rehabilitation projects (side channels and bank rehabilitation of point bars). In late fall 2005, the TRRP completed the Hocker Flat demonstration project, which was the first mechanical channel rehabilitation project stemming from the ROD.

From 1990 through 1993, the Trinity River Basin Fish and Wildlife Restoration Program constructed 27 channel rehabilitation projects on the mainstem Trinity River between Lewiston Dam and the North Fork: 18 side-channel projects and nine bank rehabilitation projects (also known as feathered-edge projects). Monitoring of the previous channel rehabilitation projects has documented Chinook salmon spawning within the constructed side-channels and along some "feathered-edge" sites (U.S. Fish and Wildlife Service unpublished data; Chamberlain, pers. comm. 2004). The nine bank rehabilitation projects between Lewiston Dam and the North Fork were constructed by physically removing vegetated sand berms along the bank to restore the channel to a "pre-dam configuration." Channel rehabilitation sites are significantly wider and shallower than corresponding control sites at intermediate and high flows. An evaluation of the monitoring results associated with early restoration efforts concluded that

"when properly constructed, bank rehabilitation can effectively increase the amount of salmonid fry rearing habitat in the Trinity River" (U.S. Fish and Wildlife Service and Hoopa Valley Tribe 1999).

Resident Native and Non-Native Fish Species

Resident native fish species found in the Trinity River basin include game fish such as rainbow trout (*Oncorhynchus mykiss*) and non-game fish such as speckled dace (*Rhinichthys osculus*), Klamath smallscale sucker (*Catostomus rimiculus*), three-spined stickleback (*Gasterosteus aculeatus*), coast range sculpin (*Cottus aleuticus*), and marbled sculpin (*Cottus klamathensis*). The abundance of resident native species and the factors affecting their abundance within the basin are not well understood; however, all these species evolved and existed in the pre-dam Trinity River and are presumably adapted to those conditions.

Non-native fish species found in the Trinity and Klamath river basins include striped bass (*Morone saxatilus*), American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS unpublished data). Striped bass have only recently been reported to occur in the Trinity and Klamath River basins, and reports of their occurrence are rare. American shad are known to occur in the lowermost portions of the Trinity River basin, but are primarily found in the lower Klamath River basin. Anadromous brown trout were propagated in the TRSSH until 1977, when this practice was discontinued because of the small numbers and the lack of anadromous characteristics of fish entering the hatchery. Currently, brown trout are largely limited to the upper portions of the river, although some brown trout exhibit anadromous characteristics. Brook trout provide a significant sport fishery in the tributary streams and high-elevation lakes of the Trinity River basin. Its life cycle and habitat requirements are similar to those of brown trout.

The structure and abundance of populations of these species in the Trinity and lower Klamath River basins are unknown. Factors that affect their abundance in the Trinity and lower Klamath River basins have not been studied and also remain unknown.

Special-Status Fish Species

For the purposes of this evaluation, special-status fish species include species that are (1) listed as threatened or endangered by the state or federal governments under the ESA or the CESA; or (2) are proposed or petitioned for federal listing as threatened or endangered; and/or (3) are state or federal candidates for listing as threatened or endangered. "Other" special-status fish species are identified by the USFWS as Species of Concern and/or are identified by CDFG as Species of Special Concern and/or California Fully Protected Species. A list of special-status fish species that were considered during the environmental analysis is included in Appendix I. This list was compiled by performing a search of the California Natural Diversity Database (CNDDB) (*Hayfork, Helena, Junction City*, and *Weaverville* quadrangles); informal consultations with the CDFG, USFWS, and NOAA Fisheries; and a review of applicable biological literature.

The SONCC ESU of coho salmon was listed as threatened pursuant to the federal ESA on April 25, 1997. This listing includes coho from the Trinity River and Klamath River basins. A review of the listing status

of the SONCC ESU coho salmon was initiated during 2002 in response to a petition to de-list the species in the Klamath River basin (67 Federal Register 40679-40680). This status review included evaluation of both natural and hatchery components of the ESU according to the recently proposed policy on the consideration of hatchery-origin fish in federal ESA listing determinations for Pacific salmon and steelhead (69 Federal Register 31354-31359). NOAA Fisheries recently concluded and proposed that the SONCC ESU coho salmon should remain listed under the ESA as a threatened species (69 Federal Register 33102-33179).

Critical habitat for the SONCC ESU coho salmon was designated on May 5, 1999. Critical habitat is designated to include all river reaches accessible to the listed coho salmon between Cape Blanco and Punta Gorda. Excluded are areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). In the Trinity River basin, designated critical habitat for the SONCC ESU coho salmon consists of the water, substrate, and adjacent riparian zone of those estuarine and riverine reaches (including off-channel habitats and accessible tributaries) downstream of Lewiston Dam (CFR Vol. 64, No. 86, May 5, 1999).

The 2000 Biological Opinion on the Trinity River Mainstem Fishery Restoration Program EIS/EIR found that the program "is not likely to jeopardize the continued existence of the [SONCC ESU] coho salmon", and "is not likely to destroy or adversely modify critical habitat for the [SONCC ESU] coho salmon."

This biological opinion included an incidental take statement authorizing the alternative actions described in this EA/DEIR, which envisioned some potential "take" of the listed coho salmon related to the channel rehabilitation component of the TRRP. The biological opinion states:

"The NMFS does anticipate that SONCC coho salmon habitat adjacent to and downstream of the 47 channel rehabilitation projects may be temporarily degraded due to localized turbidity and potential fine sedimentation of channel substrate during construction activities. However, the amount of habitat temporarily degraded due to these localized effects is negligible compared to the long-term creation of additional suitable habitat along approximately 40 miles of the Trinity River."

The 2000 biological opinion includes several terms and conditions discussed in Chapter 1 of this EA/DEIR that serve to avoid and minimize "take" of the listed species during implementation of channel rehabilitation projects.

In 2000, the California Fish and Game Commission (Commission) received a petition to list coho salmon north of San Francisco as an endangered species under provisions of the CESA. The Commission required that a comprehensive, state-wide coho salmon recovery strategy and plan be developed while they considered the petition. The coho recovery plan was adopted by the Commission in February 2004 (California Department of Fish and Game 2004). The Commission declined to list the coho under CESA in June 2004 on a split vote. On August 5, 2004, the Commission made the decision to list the California portion of the SONCC ESU coho as threatened north of Punta Gorda. As part of the normal listing process, this determination is currently under review by the Office of Administrative Law.

3.6 Fishery Resources

The green sturgeon was petitioned for listing in 2001. After a lengthy review, NOAA Fisheries determined that the species does not warrant listing in a status review published on January 29, 2003. In April 2005, NOAA Fisheries proposed to list North American green sturgeon south of the Eel River (the southern distinct population segment, or DPS); because of concerns over the uncertainty and availability of data, the northern DPS was placed on NOAA Fisheries' Species of Concern List and its status will be reassessed within 5 years if information warrants. There is no evidence to suggest that this species is present in the Trinity River above Burnt Ranch Falls.

The Pacific lamprey, along with three other lamprey species, was petitioned for federal listing in 2003. On December 27, 2004, the USFWS announced that the petition along with additional information does not present substantial scientific or commercial information indicating that listing of these species may be warranted (CFR Vol. 64, No. 86, December 27, 2004).

The Klamath Mountains Province (KMP) ESU of steelhead, which includes stocks from the Trinity River, was proposed for listing as threatened on March 16, 1995; however, on February 7, 1998, NMFS determined that the population did not warrant threatened status, but that it did warrant candidate status (as defined by NOAA Fisheries). Subsequent information on the KMP ESU steelhead was evaluated and NMFS made a final listing determination that the ESU did not warrant listing in April 2001 (CFR Vol. 66, No. 65). However, the summer-run population segment of this ESU remains a California species of special concern, as well as a USFS sensitive species (Moyle 1995; U.S. Fish and Wildlife Service 1995).

Similarly, in a 1998 status review of all west coast Chinook salmon stocks (Myers et al. 1998), the upper Klamath-Trinity Rivers ESU Chinook salmon was determined to not warrant listing as a threatened or endangered species. However, spring-run Chinook salmon within the Klamath-Trinity basin is a California species of special concern (Moyle 1995).

Local Setting

Native Anadromous Fish Species

All three species of native anadromous salmonids (i.e., spring- and fall-run Chinook salmon, coho salmon, and summer/fall- and winter-run steelhead) may be expected to occur within the project boundaries. All freshwater life stages of these species (i.e., adult, egg, fry, and juvenile/smolt) may be expected to use habitats within the project boundaries. The anadromous Pacific lamprey may also be expected to occur in each of its freshwater life stages (i.e., adult, egg, larval ammocoete, metamorphosed and emigrating juvenile) within these reaches.

Adult spring-run Chinook salmon utilize the Trinity River corridor for holding and spawning habitat. Although some deep pools are available as holding habitat within the general vicinity of the rehabilitation sites, the pools are limited by the lack of complex channel morphology. Adult Chinook are likely to hold in the deeper pool habitats, especially from late April through August. These fish commence spawning about the second week of September and spawn through mid-October. Fry and juvenile spring-run Chinook salmon would be expected in suitable habitats throughout the site from late December through October. Outmigration of spring-run smolts would occur from late October through June. Adult fall-run Chinook salmon migrate to, and are expected to spawn within and near, the project reaches in all suitable habitats, typically from late September through mid-December. Fry and juveniles are expected in suitable rearing habitats from January through June (Manji, pers. comm. 2004). Sub-yearling fall Chinook smolts generally outmigrate from April through June (Leidy and Leidy 1984; Moyle 2002).

Aquatic Habitat Conditions

The aquatic environment in the general vicinity of the four proposed rehabilitation sites is characterized by a variety of riverine habitat types (i.e., riffles, runs, and pools). Each of these habitat types consists of distinctive combinations of depth, relative water velocity, water temperature, cover, substrate composition (i.e., bedrock, cobble, gravel, sand, silt, etc.), and adjacent riparian vegetation. Riparian vegetation directly adjacent to the river is referred to as shaded riverine aquatic (SRA) habitat and is included as a component of designated critical habitat for coho salmon, as well as a component of essential fish habitat (EFH) for both coho and Chinook salmon.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines EFH as those waters and substrates necessary for spawning, breeding, feeding, or growth to maturity. As defined, the term "waters" includes aquatic areas (and their associated physical, chemical, and biological properties) that are used by fish or, where appropriate, have historically been used by fish. The term "substrate" includes sediment, hard-bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required for a sustainable fishery and the managed species' contribution to a healthy ecosystem. Finally, "spawning, breeding, feeding, or growth to maturity" refers to a species' full life cycle.

Freshwater EFH for salmon consists of four major components: spawning and incubation habitat; juvenile rearing habitat; juvenile migration corridors; and adult migration corridors, including adult holding habitat (Pacific Fisheries Management Council 2000). Important components of EFH for spawning, rearing, and migration include adequate substrate composition; water quality (e.g., dissolved oxygen, nutrients, temperature); water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity (e.g., large woody debris, pools, channel complexity, aquatic vegetation); space; access and passage; and floodplain and habitat connectivity (Pacific Fisheries Management Council 2000).

The river habitat within each of the site boundaries was characterized and mapped in October 2002 and November 2004 at a river flow of 450 cfs and 345 cfs, respectively. The following are general reach descriptions for each of the rehabilitation sites.

Conner Creek

The Conner Creek reach consists of an approximately 4,200-foot-long low-gradient riffle-run-glide complex including two pool habitat units and two split channel low-gradient riffle units (Figure 3.6-3a). Backwater habitat exists in the lower extent of the upper split-channel riffle complex at the upper end of the Conner Creek reach and above the split channel below the first of three glide units in the reach. Water depths through the Conner Creek site boundary vary from 1.5 to 7.3 feet deep (345–450 cfs), averaging

3.4 feet in depth for all habitat units. Both banks exhibit a mid- to late-seral riparian vegetation monoculture of willow/alder about 15 to 50 feet wide, creating SRA habitat covering about 60 percent of the riverbanks within the project boundary.

Valdor Gulch

The Valdor Gulch reach runs almost straight from east to west, making a hard 90-degree southerly turn in the downstream portion. The reach is approximately 7,000 feet long and is dominated by a run-glide-low-gradient riffle complex. The upper end of the reach is a high-gradient riffle, and the reach contains three boulder-formed lateral scour pools and one lateral scour pool where the river makes a hard southerly turn. Pool habitats like this provide juvenile salmonid rearing habitat, adult holding habitat, and recreation value (Figure 3.6-3b). Water depths through the Valdor Gulch site vary from 0.5 to 7.3 feet (345-450 cfs), averaging 3.2 feet for all habitat units. The left bank consists primarily of a low-gradient gravel plain bounded with a narrow area of vegetation adjacent to the channel. The right bank exhibits a moderate- to low-gradient until it reaches the 90-degree southerly turn and becomes relatively steep (>45 degrees). SRA within the project reach is approximately 53 percent.

Elkhorn

The Elkhorn reach exhibits multiple short complex habitat units in addition to long glide units (Figure 3.6-3c). The reach is approximately 4,400 feet in length and ranges from 1 to 7 feet in depth (345–450 cfs). The left bank consists primarily of a low-gradient gravel plain bounded with a narrow area of vegetation adjacent to the channel. The right bank exhibits a higher gradient and consists of mid- to late-seral riparian vegetation. SRA within the project reach is approximately 70 percent.

Pear Tree Gulch

The Pear Tree Gulch reach is a run-pocket water-glide complex consisting of two pool units: one bedrock-formed lateral scour pool and one bedrock pool (Figure 3.6-3d). The Pear Tree Gulch reach is approximately 2,800 feet in length and ranges in depth from 1.5 to 8.5 feet (345-450 cfs). Some backwater habitat exists in a bedrock-formed pool below the riffle-run unit in the upper portion of the reach. SRA coverage for the Pear Tree Gulch reach is approximately 55 percent.

All four rehabilitation site reaches contain suitable habitat for anadromous salmonids. Suitable spawning habitat occurs in all of the riffles, particularly in the low-gradient riffles. Fall-run Chinook salmon are also reported to spawn at these sites (C. Chamberlain, U.S. Fish and Wildlife Service–Arcata, unpublished data). Run and pool habitats appear to be suitable for juvenile salmonid rearing. Large cobbles and boulders dominate the river bottom in these habitats, providing suitable cover and refuge for rearing salmonids. Highly suitable fry habitat was limited to the stream edges in the low-gradient riffles and on point bars. Additional fry rearing habitat was observed at the tail outs of the pool habitats. The deeper pools appear to provide suitable holding conditions for adult steelhead and salmon.



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.6-3c Elkhorn Aquatic Habitat





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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Adult coho migrate to and may spawn within or near the rehabilitation sites, typically from late October through December. Although juvenile coho rearing habitat is considered to be limited in the general vicinity of these sites, juveniles are expected in suitable habitats year-round throughout the mainstem river from the North Fork Trinity River confluence upstream to Lewiston Dam (J. Glase, pers. comm. 2002). Pool habitat associated with boulders and large woody debris is particularly preferred habitat by rearing coho salmon (Hassler 1987; Sandercock 1991; Moyle 2002). Additionally, Brown et al. (1994) reported pool habitats greater than 1 meter in depth were preferred by juvenile coho salmon. Based on aquatic habitat typing conducted in 2002 and 2004 (345 cfs and 450 cfs, respectively), there are 11 pool habitat units averaging 1 meter or greater in depth within the project reaches. These units are considered limited in their quality and quantity within the project reaches.

Adult summer/fall-run steelhead migrate and are expected to hold in the deeper pools and runs in the general vicinity of these sites from April through September (Leidy and Leidy 1984, Moyle 2002). These fish will typically actively feed through the salmon spawning season, and migrate to the upper river reaches and into tributaries to spawn from February through April. Winter-run steelhead typically migrate to spawning grounds from November through April and spawn during the same time as the summer/fall run. Suitable steelhead spawning habitat occurs in the riffles within the project reach. Fry and juvenile steelhead of both runs may be expected in the riffle and run/pool habitats year-round, especially those associated with large cobble and boulder cover as well as overhanging riparian vegetation and large woody debris (Hampton 1988; Moyle 2002). Suitable juvenile steelhead rearing habitat occurs throughout the project reach.

Adult Pacific lampreys migrate to spawn in the upper Trinity River and tributaries during the spring and early summer, although they are documented to occur in the river near Lewiston through August (Moffett and Smith 1950; Moyle 2002). Suitable lamprey spawning habitat occurs on the low-gradient riffles and on the run/pool tail outs throughout the site. Based on juvenile outmigrant trapping data, larval lampreys and juveniles are expected to be abundant year-round in the upper Trinity River (Glase, pers. comm. 2002). Juveniles require areas of relatively slow currents and mud- and sand-bottomed backwaters and pools, where they burrow and filter feed on detritus and algae (Moyle 2002). Based on this habitat preference, lamprey ammocoetes may be expected in the mud and sand sediments of the pool and run/edgewater habitats throughout the project reaches.

Resident Native and Non-Native Fish Species

Site-specific information on the occurrence of resident fish species is not available for the rehabilitation sites. This EA/DEIR evaluates the potential for resident fish species to occur in or near the project reaches based on habitat characteristics observed at the sites and professional knowledge of the habitat requirements and general geographic distributions of species known to inhabit the Trinity River. Species that can be expected to occur include speckled dace, Klamath smallscale sucker, three-spined stickleback, coast range sculpin, and marbled sculpin, although the latter species is considered uncommon in the Trinity River (Moyle 2002). All of these species may occur as adults and juveniles within the project reaches. They may be found in the pools, runs, and riffles during the spring and summer months, but

3.6 Fishery Resources

retreat to the pools and slow edgewater areas during the winter months and higher flows. It is not known if these species spawn in the general vicinity of the rehabilitation sites.

Adults and juveniles of the introduced brown trout are known to occur within the Trinity River downstream of Lewiston Dam. Brown trout are thought to occur mostly as a resident population occurring upstream of Grass Valley Creek, although significant numbers of brown trout are captured each year in the CDFG upstream migrant trap at Junction City (M. Currier, California Department of Fish and Game, pers. comm.) Whether these fish are anadromous migrants or simply moving within the river is not certain, although brown trout are known to exhibit anadromy in other streams where they occur. Brown trout have not been reported from the project reaches; however, the reaches contain suitable habitat for this species.

3.6.2 REGULATORY SETTING

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies before implementation of the rehabilitation activities.

Federal

NOAA Fisheries

Federal Endangered Species Act

The ESA defines "take" (Section 9) and generally prohibits the "taking" of a species that is listed as endangered or threatened (16 USC. 1532, 50 CFR 17.3). Under the ESA, the "take" of a federally listed species is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" includes intentional or negligent acts or omissions that actually kill or injure wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species. Reclamation, the federal lead agency for the Proposed Action, is required to consult with NOAA Fisheries concerning effects to SONCC ESU of coho salmon pursuant to Section 7 of the ESA. The 2000 Biological Opinion and Incidental Take Statement on the Mainstem Fisheries Restoration Program EIS/EIR provided ESA Section 7 coverage for the Proposed Action.

Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan.

The MSA requires federal agencies to consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agencies, that may adversely affect EFH (MSA Section 305[b][2]). A component of this consultation process is the preparation and submittal of an Essential Fish Habitat Assessment (EFHA). The length of the EFHA will vary based on the complexity and magnitude of potential impacts to EFH, but all EFHAs must include the following information: (1) a description of the proposed action; (2) an analysis of the effects, including cumulative effects, of the proposed action on EFH, the managed species, and associated species, such as major prey species, including affected life history stages; (3) the federal agency's views regarding the effects of the proposed action on EFH; and (4) proposed mitigation, if applicable. In instances where MSA and ESA issues overlap, NOAA Fisheries encourages an integrated approach for consultation.

The EFH mandate applies to all species managed under a federal fishery management plan (FMP). For the Pacific coast (excluding Alaska), there are three FMPs covering groundfish, coastal pelagic species, and Pacific salmon. As the federal lead agency, Reclamation will need to consider the impact of the Proposed Action on EFH for coho and Chinook salmon in the Trinity River pursuant to the Pacific Coast Salmon FMP.

State

California Endangered Species Act

Under the CESA, the CDFG has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). The CDFG also maintains a list of "candidate species," which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species. In addition, the CDFG maintains lists of "species of special concern," which serve as species "watch lists." Pursuant to the requirements of the CESA, any local or state agency reviewing a proposed project within its jurisdiction must determine whether any species that is state listed as endangered or threatened may be present in the project study area and determine whether the proposed project will have a potentially significant impact on any of these species. In addition, the CDFG encourages informal consultation on any proposed project that may affect a candidate species.

Project-related impacts to species listed as endangered or threatened under CESA would be considered significant. State-listed species are fully protected under the mandates of CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under Section 2081 of the Fish and Game Code of California. Authorization from CDFG would be in the form of an Incidental Take Permit. For the Proposed Action, the Regional Water Board, as the CEQA lead agency, would need to obtain an incidental take permit if the activities described in this EA/DEIR could result in the take of a state-listed species (i.e., coho salmon).

"Fully Protected" Fish Species

California law (Fish and Game Code, § 5515) also identifies 10 "fully protected fish" that cannot lawfully be "taken," even with an incidental take permit. None of these species is present in the Trinity River or its tributaries.

Local

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies related to fishery resource issues described in this EA/DEIR, were taken from the applicable elements of the General Plan (Trinity County 2001), including the Junction City Community Plan (Trinity County 1987).

County Wide Goals and Objectives

Environmental

To strive to conserve those resources of the County that are important to its character and economic wellbeing

- by assuring that developments occurring on these lands are compatible with the resources;
- by strongly supporting the County as "lead agency" or as an integral participant in any state or federal project within the County so that all agencies are made aware of local desires and all plans are coordinated;
- by utilizing a sound resource-related planning process in decision-making; and
- by protecting not only rare and endangered species, but also required habitat for more plentiful species.

Junction City Community Plan Goals and Objectives

The Junction City Community Plan covers approximately 42 square miles (27,000 acres) of area centered on the Trinity River from Maxwell Creek to slightly downstream from Helena.

Natural Resources

Goal: To preserve and maintain open space areas for a variety of wildlife uses.

- Protect floodplain areas from intensive development, which could lead to adverse impacts on wildlife.
- Review future development to insure protection of significant habitat areas (other than critical winter range).
- Preserve and protect special habitat areas.

Goal: To protect and improve fish habitat within the Plan area.

• Encourage the development and implementation of fishery restoration projects in conformance with the Trinity River Restoration Project within the Plan area.

Goal: Maintain and enhance the high quality of the area's natural resources.

• Continue and support the County's policy prohibiting the use of herbicides or pesticides as a land management tool.

Project Consistency with the Trinity County General Plan

This section compares the goals and objectives of the Proposed Action to the relevant local planning policies (i.e., Trinity County General Plan, Junction City Community Plan) to determine if there are any inconsistencies.

The goals and objectives described in Chapter 1 are generally compatible with the applicable General Plan goals and policies summarized above. The overall goal of the Proposed Action is to rehabilitate the sites so that they function in a manner that is closer to historic conditions (e.g., pre-Lewiston Dam).

3.6.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

The following section provides a brief overview of the analytic methods used to assess potential impacts of the Proposed Action on fisheries resources. These methods include a comprehensive literature search and focused field surveys.

Evaluation of the presence of special-status fish species and sensitive habitats within the project boundaries established for the Proposed Action was conducted by performing a database search of the CNDDB, informally consulting with resource agencies (i.e., CDFG, NOAA Fisheries, USFWS), and reviewing environmental documents and technical studies prepared for projects in the vicinity. Representatives from the Corps, CDFG, NOAA Fisheries, USFWS, and the Hoopa Valley and Yurok Tribes were contacted to discuss specific biological resource issues associated with the Proposed Action, including potential impacts and suggested mitigation measures.

A reconnaissance-level site visit was conducted in October 2002 and November 2004 to characterize the aquatic habitats and potential suitable spawning and rearing habitat present within the site boundary. The purpose of this assessment was to identify and map aquatic habitat within the project reaches.

Significance Criteria

Significance criteria used to assess the potential impacts of the Proposed Action on fisheries resources are based on the current scientific understanding of biological requirements and ecological status of the species of interest, and the regulatory standards of county, state, and federal agencies, including the *CEQA Guidelines*. A significant impact on anadromous salmonids and other native fish would occur if the project would result in any of the following:

 potential for reductions in the number, or restrictions of the range, of an endangered or threatened native fish species or a native fish species that is a candidate for state listing or proposed for federal listing as endangered or threatened;

- potential for substantial reductions in the habitat of any native fish species other than those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- potential for causing a native fish population to drop below self-sustaining levels;
- substantial adverse effect, either directly or through habitat modifications, on any native anadromous species identified as a sensitive or special-status fish species in local or regional plans, policies, or regulations;
- substantial interference with the movement of any native anadromous or resident fish species;
- a conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan relating to the protection of native anadromous species or resident fish species;
- mortality of state- or federally listed fish species, or species that are candidates for listing or proposed for listing;
- reductions in the size of the population of a native fish species sufficient to jeopardize its longterm persistence;
- temporary impacts to habitats such that native fish species suffer increased mortality or lowered reproductive success that jeopardizes the long-term persistence of those local populations;
- permanent loss of designated critical habitat and/or essential habitat of a listed species or special-status native fish species; or
- reduction in the quantity or quality of habitats in which native fish species populations occur sufficient to reduce the long-term abundance and productivity of local populations.

Impacts and Mitigation Measures

The following sections provide detailed descriptions of the potential impacts to fishery resources and mitigation measures for each alternative evaluated in the EA/DEIR. To reduce redundancy and improve readability, the impacts to the federally listed SONCC coho salmon, special-status species (i.e., "species of special concern" for CEQA, and "species of concern" for NEPA), and non-listed fish species are described together under each alternative action. Because the threshold for "significance" of an impact is lower (i.e., more restrictive) for threatened and endangered species, impacts are described separately when they differ among species. The effects have been evaluated for the principal species of interest and address the full range of potential impacts to anadromous and resident riverine fishes within the project boundaries. The nature of the Proposed Action requires recognition that temporary impacts to salmonids and other riverine species would occur, but the ultimate goal of the project is to improve fish habitat suitability and availability over the long term.

Table 3.6-3 summarizes the potential fishery resource impacts resulting from implementation of the Proposed Action.

TABLE 3.6-3SUMMARY OF FISHERY RESOURCES IMPACTS FOR THE PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
1. Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon.	All sites	NI	LS/B	LS/B	N/A ¹	N/A ¹
2. Implementation of the project could result in increased erosion and sedimentation that could adversely affect fishes, including federally listed coho salmon.	All sites	NI	S	S	LS	LS
3. Construction activities associated with the project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon.	All sites	NI	S	S	LS	LS
4. Construction activities associated with the project could result in the mortality of rearing fishes, including federally listed coho salmon.	All sites	NI	S	S	LS	LS

3.6 Fishery Resources

TABLE 3.6-3

SUMMARY OF FISHERY RESOURCES	IMPACTS FOR THE PROJECT
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Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
5. Implementation of the project would result in the permanent or temporary loss of shaded riverine aquatic habitat for anadromous salmonids.	All sites	NI	S	S	LS	LS

Notes:

LS	=	Less than Significant	:	S	=	Significant	SU =	S	Significant Unavoidable	ļ
NI	=	No Impact		в	=	Beneficial	N/A =	: N	Not Applicable	
¹ Beca	ause	this potential impact	is le	SS	than	significant.	no mitig	atio	n is required.	

Conner Creek, Valdor Gulch, Elkhorn, and Pear Tree Gulch

No-Action Alternative

Under the No-Action Alternative, there would be no effects on spawning and rearing habitat other than those associated with current ongoing actions because the project would not be constructed.

Proposed Action

Coho Salmon. No permanent adverse effects to spawning habitat for coho salmon within the project boundaries will occur. Figures 3.6-4(a-d) illustrate the extent of the grading activity that would occur under the Proposed Action. Long-term expectations are that implementation of the Proposed Action would result in an increase in channel migration across the floodplain within the project boundaries. This engineered fluvial channel would result in a net increase in point bar surface area through coarse sediment deposition, thereby increasing riffle-spawning habitat within the project boundaries. Temporary effects on spawning habitat associated with construction of the Proposed Action are expected to be limited to short-term, localized sedimentation caused by settling of silt disturbed by bank-side excavation activities. The amount of silt disturbed by this activity is not expected to significantly affect downstream spawning areas. Construction near the active low-flow channel is planned to occur during dry conditions (primarily between August 1 and October 15), which is outside the coho salmon spawning period. However some river edge work may occur later during dry weather, as needed.

Suitable rearing habitat for juvenile coho salmon and other salmonids occurs within project boundaries. However, rearing habitat for coho salmon is limited by the relatively small amount of pool and backwater habitat associated with suitable cover. Some temporary effects on the quality of juvenile salmonid rearing

Impact 3.6-1:
 Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon. No Impact for the No-Action Alternative; Less-than-Significant/Beneficial Impact for the Proposed Action and Alternative 1.

habitat will occur through removal of riparian vegetation that contributes to SRA habitat in the project reaches. These temporary effects range from elimination of stream shading that moderates localized water temperatures to removal of physical cover provided by overhanging riparian vegetation and associated roots protruding from eroding banks. These effects may result in displacement of rearing salmonid fishes from the project reach by reducing the suitability of the habitat, and may lead to increased predation risk or reduced feeding efficiency through the loss of the cover function provided by the SRA habitat (Michney and Hampton 1984; Michney and Deibel 1986).

The temporary impacts on rearing habitat are expected to be offset by the long-term beneficial changes to physical rearing habitat associated with implementing the Proposed Action. These benefits will accrue from the engineered improvements of floodplain connection to the river and channel migration through the upper elevation floodplain, and from the revegetation of the floodplain with native plant species that will eventually contribute shade and large wood to the river channel. Improved river connection with the floodplain during high spring-time flows is expected to increase areas of slow, shallow-water habitat preferred by salmonid fry. The process of channel migration through the floodplain may also create new shallow point bars, further increasing the availability of this preferred habitat. The channel migration process and engineered side channel habitats will collectively increase the relative abundance of this preferred salmon fry rearing habitat, compared to the existing condition within the project reaches. Ultimately, the collective changes in channel morphology as a result of the Proposed Action and by planned future bank rehabilitation projects throughout the upper Trinity River will improve rearing habitat diversity for all anadromous salmonids (U.S. Fish and Wildlife Service and Hoopa Valley Tribe 1999).

Chinook Salmon. Potential impacts and benefits to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. Spring- and fall-run salmon are known to spawn and rear within the project boundaries. Spring-run Chinook salmon juveniles can be expected to rear year-round within the project boundaries.

Steelhead. Potential impacts and benefits to the KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho and Chinook salmon. Summer, fall, and winter runs of KMP ESU steelhead are known to migrate and stage, and they may spawn (as adults) and rear (as juveniles) within the project boundaries established for the Proposed Action.

Pacific Lamprey. Potential impacts and benefits to Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Temporary impacts specific to Pacific lamprey may include disturbance of spawning lamprey, which spawn during the early summer. The removal of riparian vegetation that contributes to SRA habitat within the project boundaries could also have a temporary impact on adult Pacific lamprey by reducing holding and hiding habitat, which is particularly important for upstream migrant adults. However, the implementation of the revegetation plan will alleviate this impact over the longer term.

Alternative 1

Coho Salmon. Rehabilitation activities at Valdor Gulch and Pear Tree Gulch are common to both action alternatives. Alternative 1 would result in temporary and permanent construction-related impacts to riverine habitats similar to those described for the Proposed Action for these two sites. Figures 3.6-4 (a and c) illustrate the extent of the grading activity under Alternative 1 for Elkhorn and Conner Creek. Most of the expected benefits of the Proposed Action would also occur under this alternative. Under Alternative 1, improvements in fish habitat could require a greater time period than under the Proposed Action.

Chinook Salmon. Alternative 1 would result in temporary and permanent construction-related impacts to spawning and rearing habitat for Upper Klamath-Trinity Rivers ESU Chinook salmon similar to those associated with the Proposed Action. Most of the expected benefits of the Proposed Action would occur, but would require a greater time period.

Steelhead. Alternative 1 would result in temporary and permanent construction-related impacts to spawning and rearing habitat for KMP ESU steelhead similar to those associated with the Proposed Action. Most of the expected benefits of the Proposed Action would occur, but would require a greater time period.

Pacific Lamprey. Alternative 1 would result in temporary and permanent construction-related impacts to spawning and rearing habitat for Pacific lampreys similar to those associated with the Proposed Action. Most of the expected benefits of the Proposed Action would occur, but would require a greater time period.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.6-2: Implementation of the project could result in increased erosion and sedimentation levels that could adversely affect fishes, including federally listed coho salmon. No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.

No-Action Alternative

Under the No-Action Alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species because the project would not be constructed.

Proposed Action

Coho Salmon. Activities related to implementation of the Proposed Action would result in the localized loss of vegetation and general disturbance to the soil. Removal of vegetation and soil could accelerate erosion processes within project boundaries and increase the potential for sediment to enter the Trinity



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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.6-4a Conner Creek - Impacts of Proposed Action and Alternative 1 on Aquatic Habitats



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.6-4b Valdor Gulch - Impacts of Proposed Action on Aquatic Habitats

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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.6-4c Elkhorn - Impacts of Proposed Action and Alternative 1 on Aquatic Habitats



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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.6-4d Pear Tree Gulch - Impacts of Proposed Action on Aquatic Habitats

River. The turbidity of a water body is related to the concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, affecting aquatic organisms either directly or indirectly (Alabaster and Lloyd 1980).

Within the project boundaries, silt and sand in the river banks would be disturbed during excavation of the riverine activity areas. Exposed soils on the excavated surfaces are susceptible to mobilization from rainfall and during early season high flows. Fill placements and treatments in the upland spoiling sites could be vulnerable to erosion and runoff during rainfall events. Although no in-river excavation is planned, minor amounts of excavated material may be delivered to the river during grading activities.

Erosion and deposition of fine sediments associated with implementation of the Proposed Action are expected to be localized and temporary. Some fine-textured materials may settle near or on known spawning habitats located downstream of riverine rehabilitation areas, but these materials are not expected to impair redd excavation or spawning. The majority of grading activities are expected to be performed during dry conditions (August —October 15 or later, as weather permits), and thus would avoid effects on adult coho migration and spawning, and smolt emigration. Any juvenile coho salmon rearing in the area during this timeframe could be temporarily displaced or their social behavior could be temporarily disrupted by an increase in turbidity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985). These temporary impacts were anticipated and addressed in the 2000 biological opinion and associated incidental take statement for the ROD.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. Consequently, displacement of fine-textured sediment, potential erosion runoff, and elevated turbidity for short distances downstream could occur during the migration and rearing seasons. Spring- and fall-run Chinook salmon are known to spawn in suitable habitats encompassed by the rehabilitation sites. No construction activities are proposed during the spawning period. Spring-run Chinook juveniles are expected to rear throughout the year within the boundaries of all restoration sites.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho and Chinook salmon. Summer, fall, and winter runs of KMP ESU steelhead are known to migrate, stage (as adults), and rear (as juveniles) within the project boundaries, throughout the proposed construction season. All three runs generally spawn during the winter.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Adult Pacific lampreys migrate upstream to spawn from spring through

3.6 Fishery Resources

early summer and again in the fall. Larval lampreys inhabit the river year-round. Siltation of nests that may be built in suitable habitats (i.e., low-gradient riffles) could occur. Filter feeding by larval lampreys could be disrupted by an increase in suspended sediments caused by construction-related erosion, although this impact would be very localized and temporary.

Alternative 1

Coho Salmon. Activities at Valdor Gulch and Pear Tree Gulch are the same as those for the Proposed Action. Alternative 1 would result in temporary effects on coho salmon from erosion, sedimentation, and turbidity levels similar to those described for the Proposed Action. Most of the expected benefits of the Proposed Action would also occur. The distinction is that the areas of excavation and upland fill and spoils placement would be smaller for the Conner Creek and Elkhorn sites. This reduction would result in less disturbed and loosened soil and potentially less localized sedimentation and turbidity during storms and initial flood events that involve the excavated riverine rehabilitation areas.

Chinook Salmon. Alternative 1 would result in temporary effects on erosion, sedimentation, and turbidity impacts for Upper Klamath-Trinity Rivers ESU Chinook salmon similar to those previously described for coho salmon.

Steelhead. Alternative 1 would result in temporary effects on KMP ESU steelhead from erosion and sedimentation similar to those previously described for coho salmon.

Pacific Lamprey. Alternative 1 would result in temporary effects on Pacific lampreys from erosion and sedimentation similar to those previously described for coho salmon.

Mitigation Measures

No-Action Alternative

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

2a: Turbidity increases associated with project construction activities shall not exceed the Regional Water Board water quality objectives for turbidity in the Trinity River basin. Turbidity levels are defined in nephelometric turbidity units (NTUs). The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (2001), is summarized below.

Turbidity shall not be increased by more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits.

2b: To ensure that turbidity levels do not exceed the threshold listed above during project construction activities at the river's edge, Reclamation or its contractor shall monitor turbidity levels 50 feet upstream and 500 feet downstream of the point of river's edge construction activities. At a minimum, field turbidity measurements shall be collected whenever a visible

increase in turbidity is observed. Monitoring frequency shall be a minimum of every 2 hours during periods of increased turbidity.

2c: Reclamation or its contractor shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes Best Management Practices (BMPs) for the project. Ripping of all riparian areas to create furrows parallel to the river is expected to stop delivery of storm water to the river; however, BMPs, including silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness, may be necessary. Proper implementation of erosion and sediment controls and dewatering activities shall be adequate to minimize sediment inputs into the Trinity River until construction ends. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that the devices are functioning properly. Any erosion control devices found to be nonfunctional must be repaired or replaced following their discovery or by the end of the work day if rain is imminent or if a greater than 50 percent possibility of rain has been forecast within the following 24 hours by the National Weather Service. In those cases where, for safety reasons, repairs cannot be made immediately, they should be completed as soon as the work can safely be performed. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: Less than Significant.

Impact 3.6-3: Construction activities associated with the project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.*

No-Action Alternative

Under the No-Action Alternative, there would be no risk of accidental hazardous material spills because the project would not be constructed.

Proposed Action

Coho Salmon. Construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills could occur, and there would be a risk of larger releases. Without rapid containment and clean up, these materials could be toxic, depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all salmonid life stages within close proximity to construction activities.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River resulting from accidental spill of hazardous materials would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to KMP ESU steelhead populations in the Trinity River resulting from accidental spill of hazardous materials would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts to pacific lamprey populations in the Trinity River resulting from accidental spill of hazardous materials would be similar to those previously described for coho salmon.

Alternative 1

The risk of, and impacts resulting from, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to those associated with the Proposed Action for all anadromous fish species.

Mitigation Measures

No-Action Alternative

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

Construction specifications shall include the following measures to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) to vegetation and aquatic habitat resources within the project boundaries:

- **3a:** Equipment and materials shall be stored away from wetland and surface water features.
- **3b:** Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 150 feet away from the Trinity River.
- **3c:** The contractor will develop and implement site-specific Best Management Practices (BMPs), a water pollution control plan, and emergency spill control plan. The contractor will be responsible for immediate containment and removal of any toxins released.

Section 3.5, Water Quality, and Section 3.15, Hazards and Hazardous Materials, provide additional details on mitigation measures developed for water quality standards, hazards, and hazardous materials. The responsible agencies (i.e., Regional Water Board) will be involved in the development and approval of these plans and practices.

Significance after Mitigation: Less than Significant

Impact 3.6-4: Construction activities associated with the project could result in the mortality of rearing fishes, including federally listed coho salmon.. No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.

No-Action Alternative

Under the No-Action Alternative, construction-related mortality to rearing salmonids would not occur because the project would not be constructed.

Proposed Action

Coho Salmon. Coho salmon are known to occur throughout the Trinity River. Limited suitable coho salmon rearing habitat exists within project boundaries; however, juvenile coho salmon may be expected

to rear within project boundaries year-round. Adult coho migrate through the project boundaries, and suitable spawning habitat exists within the project boundaries. Direct injury to, or mortality of, coho salmon will be generally avoided during construction activities because no in-river work is planned under the Proposed Action. In addition, excavation work on the river's edge will take place between August 1 and October 15 (or during dry conditions afterward), after the most susceptible coho fry phase is passed.

A small, temporary, but uncertain level of stranding of coho salmon fry may occur on the newly excavated floodplains and side channels during rapidly receding flood-flow periods during the winter and early spring when fry are emerging. Additionally, construction of side channel features may result in stranding conditions as flows recede, particularly if the downstream end fills with fine sediments. potentially stranding coho salmon fry. Although stranding of fry under such receding flood conditions occurs on naturally shallow floodplains and in flood bypasses (Sommer 2001), the constructed features may increase this process to varying degrees. All of the rehabilitation site floodplain designs incorporate a downstream slope equal to that of the river channel and would drain in a downstream direction that would be guided toward the river channel by earthwork contours to minimize the potential for stranding. As fluvial channel migration occurs through the floodplain, the potential for fry stranding on the floodplain is expected to equilibrate to that of a natural stranding risk.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho and Chinook salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1

Construction-related mortality of adult and juvenile fishes associated with Alternative 1 would be similar to that of the Proposed Action. The difference in magnitude of the potential for a fry stranding hazard on the floodplain and associated side channels compared to the Proposed Action is uncertain, but is likely to be minimal.

Mitigation Measures

No-Action Alternative

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.
3.6 Fishery Resources

Proposed Action and Alternative 1

- **4a:** To avoid or minimize potential injury and mortality of fish during excavation (berm removal) on the river banks, equipment shall be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.
- **4b:** Monitoring of the rehabilitated floodplain sites for salmon fry stranding shall be performed by a qualified fishery biologist immediately after recession of floodflow events designated as a 1.5- year or less frequent event (i.e., $Q \ge 6,600$ cfs) for a period of 3 years following construction. Such fry stranding surveys shall be performed during the months of January through May. If stranding is observed, Reclamation will take appropriate measures to modify floodplain topography to reduce the likelihood of future occurrences of fry stranding.

Significance after Mitigation: Less than Significant.

Impact 3.6-5:Implementation of the project would result in the permanent and temporary loss of
shaded riverine aquatic habitat for anadromous salmonids. No Impact for the No-Action
Alternative; Significant Impact for the Proposed Action and Alternative 1.

No-Action Alternative

Under the No-Action Alternative, loss of SRA habitat would not occur because the project would not be constructed.

Figures 3.6-5 (a-d) illustrate riparian area habitat impacts associated with the Proposed Action and Alternative 1. For purposes of this EA/DEIR, riparian habitat is a general term that encompasses the range of riparian vegetation conditions within the project boundaries. It does not have a specific legal description or definition; however, it does include information from habitat mapping and the wetland delineation described in Section 3.7.

Proposed Action

Coho Salmon. Removal of montane riparian wetland vegetation along the banks of the Trinity River could adversely affect the quality of rearing habitats used by salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of large woody debris and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is included as an element of designated critical habitat for the SONCC ESU coho salmon and a component of EFH for Chinook and coho salmon. However, complexity in the riparian environment, also important in fish habitat, will be increased under the Proposed Action.

Removal of the riparian berm and re-activation of adjacent floodplains within riverine rehabilitation areas would allow for natural revegetation of most of the riparian habitat (mixture of willows, alders, and cottonwoods) estimated to be lost as a result of berm removal and floodplain contouring. In addition, riparian habitat removed under the Proposed Action would be replaced during the revegetation efforts. Therefore, no permanent net loss of SRA features would necessarily occur.



North State Resources, Inc.

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

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Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78



forth State Resources, Inc.

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho and Chinook salmon.

Pacific Lamprey. Potential impacts to Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1

Impacts to riparian habitat for Alternative 1 are expected to be similar to the impacts of the Proposed Action. (Figures 3.6-5 a-d). After construction and lowering of the floodplain, conditions and riparian values will be enhanced so that these areas will revegetate naturally in conjunction with restoration planting so that no net loss in SRA would necessarily occur. Complexity in the riparian environment will be increased under the Proposed Action. Riparian habitat removed under Alternative 1 would be replaced by natural revegetation and planting . Therefore, no permanent net loss of SRA features would necessarily occur. However, because less floodplain will be made suitable for riparian revegetation under Alternative 1, it may be more difficult to identify and prepare areas that are appropriate for riparian revegetation, more difficult to sustain the habitat once planted, and less natural recruitment will likely occur.

Mitigation Measures

No-Action Alternative

Since no significant impacts were identified, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

To maintain overall SRA habitat values within the project reach, the Proposed Action would be designed to minimize losses of riparian vegetation adjacent to the Trinity River channel, except where necessary to re-activate river access to the floodplain. Boundary markers shall be installed along all riparian areas outside of delineated rehabilitation areas. These markers will stop construction access so that impacts to riparian vegetation are minimized. To compensate for loss of riparian vegetation within project boundaries, Reclamation shall implement the following measures:

5a: Mitigation for riparian plant removal will be based on the actual acreage of riparian vegetation coverage affected by the Proposed Action/Alternative 1 rather than the specific numbers of plants. This measure will support the TRRP objective of removing the homogeneous plant community and replacing it with a diverse assemblage of riparian vegetation.

3.6 Fishery Resources

- **5b:** Reclamation shall develop and implement a revegetation plan for impacts to riparian habitat that occur during project construction. This plan will identify planting mixes, planting procedures, and monitoring requirements. Planted species will include riparian species native to the area that would resist invasion by noxious plant species. The revegetation plan will identify appropriate mitigation for impacts to SRA habitat, describe planting techniques and locations, and incorporate plantings of native species that would resist invasion by noxious plant species.
- **5c:** Reclamation or its contractor shall monitor the plantings annually for up to 3 years to ensure that trees and shrubs have become established. Supplemental planting will be conducted, as necessary, to ensure that this performance standard is met. To meet the revegetation success criteria, the rehabilitation areas should demonstrate a 60 percent survival rate for planted species at the end of the third growing season. Natural recruitment of native riparian species can be included in this criterion. If recovery success cannot be determined after 3 years, an additional 2 years of monitoring shall be conducted. If at any time during the monitoring period it is determined that the success criteria will not be met in the planted and naturally restored areas, additional remediation measures shall be developed and implemented. Once riparian mitigation has been successfully completed, Reclamation shall submit a memorandum to the Corps and NOAA Fisheries documenting the results.

Significance after Mitigation: Less than Significant

As described in Section 3.3, Geology, Fluvial Geomorphology, and Soils, impacts to vegetation, wildlife, and wetland resources from the Proposed Action and Alternative 1 would largely be a by-product of geomorphic processes, including the amount and timing of flows and the transport and deposition of sediment. This section describes the vegetation, wildlife, and wetlands that are known to occur within the site boundary, as well as the impacts on these resources. The discussion of biological resources is based on a focused literature review, informal consultation with resource agencies, and observations made during site visits. Vegetation communities and wildlife habitats were identified and characterized during field surveys. Fisheries resources are discussed separately in Section 3.6.

3.7.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Plant and Wildlife Communities

Regional Setting

Prior to dam construction, the natural hydrograph (record and graphical representation of discharge as a function of time at a specific location) of the Trinity River was characterized by high winter and spring flows followed by greatly reduced summer flows (with sizeable inter-year variability). Large winter and spring floods maintained multi-age woody riparian vegetation through channel scouring, periodic channel migration, and varying seed distribution during flow recession. The result was a mosaic of early-successional willow-scrub vegetation combined with patches of more mature willow-alder and alder-dominated associations.

Construction of the TRD greatly reduced the magnitude of peak flows, obstructed coarse sediment input from above the dam, and allowed fine sediment to accumulate on channel features that had previously been regularly scoured by flood flows. The result is a more static system that is susceptible to expansion and maturation of woody riparian vegetation. This has had detrimental effects, including formation of a riparian berm that effectively armors and anchors the riverbanks, thereby preventing the river from meandering within the channel. Establishment of these berms further exacerbates the encroachment and maturation of woody vegetation.

Riparian vegetation is most prevalent along the Trinity River from the Lewiston Dam to the confluence with the North Fork. This reach includes approximately 330 acres of early-successional willow-dominated vegetation, 170 acres of more mature later-successional alder-dominated vegetation, and 380 acres of willow-alder mix (U.S. Fish and Wildlife Service et al. 1999). Between the North Fork and the South Fork, the mainstem Trinity River channel is constrained by canyon walls that limit riparian vegetation to a narrow band. In comparison to upstream reaches, peak flows in this reach have been affected only modestly by dam operations. Between the South Fork and the Klamath River, the Trinity River alternates between confined reaches with little riparian vegetation to alluvial reaches with vegetation similar to pre-dam conditions in the reach between Lewiston Dam and the North Fork. At Trinity and Lewiston Reservoirs, plant species consist of those typically found in standing water and include floating species, rooted aquatic species, and emergent wetland species. Emergent wetland and riparian vegetation is constrained by fluctuating water levels and steep banks.

Many wildlife species that inhabited river and riparian habitats prior to the TRD still occur along the Trinity River, although species that prefer early-successional stages or require greater riverine structural diversity likely occurred in greater abundance prior to the TRD. Common species present prior to the TRD likely included the rough-skinned newt (*Taricha granulosa*), western aquatic garter snake (*Thamnophis couchi*), foothill yellow-legged frog (*Rana boylii*), western pond turtle (*Clemmys marmorata marmorata*), and American dipper (*Cinclus mexicanus*). Wildlife species that foraged on the abundant salmon (*Oncorhynchus tshawytscha*) and steelhead (*Oncorhynchus mykiss*) runs (e.g., black bear [*Ursus americanus*], bald eagle [*Haliaeetus leucocephalus*], and other scavengers) were also common along the pre-dam Trinity River (U.S. Fish and Wildlife Service et al. 2000).

The current flow regime has established conditions favoring upland habitat at the expense of wetland and aquatic habitat. The shift in habitat types is a causative factor in the current depressed populations of aquatic, semi-aquatic, and wetland wildlife species compared to terrestrial species. Species such as the western pond turtle, an example of a semi-aquatic species, have declined since construction of the TRD in response to diminishing instream habitat. In contrast, species that favor mature, late-successional riparian habitats, such as the northern goshawk (*Accipiter gentiles*) and black salamander (*Aneides flavipunctatus*), prefer the current mature conditions (U.S. Fish and Wildlife Service et al. 2000). Impounded water in reservoirs attracts resting and foraging waterfowl and other species that favor standing or slow-moving water. The TRD reservoirs also provide important foraging habitat for eagles and other raptors that prey on fish and waterfowl.

Local Setting

The following descriptions of plant and wildlife community types follow the nomenclature used in Sawyer and Keeler-Wolf (1995) and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer Jr. 1988) with the exception of the foothill pine and open water categories, which are not included in either of these references. Figures 3.7-1a-d illustrate the locations of plant communities mapped throughout the sites. Note that waters of the United States, such as fresh emergent wetlands, riparian wetlands, and intermittent creeks, also occur within these communities (see "Jurisdictional Waters" for a more detailed discussion of these features).

Thirteen plant communities occur in the overall project area: annual grassland, barren, foothill pine, Klamath mixed conifer, mixed chaparral, montane hardwood, montane hardwood-conifer, montane riparian, perennial grassland, open water, ponderosa pine, riverine, and urban. These habitats are discussed in greater detail below.

Table 3.7-1 summarizes the plant communities that occur in each of the four rehabilitation sites.

Annual Grassland. Annual grassland habitat occurs at all four sites. This plant community is dominated mainly by introduced annual grass species, including wild oat (*Avena fatua*), soft brome (*Bromus mollis*), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), and hare barley (*Hordeum leporinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), California poppy (*Eschscholzia californica*), turkey mullein (*Eremocarpus setigerus*), true clovers (*Trifolium* spp.), burclover (*Medicago polymorpha*), and many others.



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

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Figure 3.7-1a Conner Creek Plant Community Types and Boundaries of Waters of the United States, including Wetlands



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

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Figure 3.7-1b Valdor Gulch Plant Community Types and Boundaries of Waters of the United States, including Wetlands



Figure 3.7-1c Elkhorn Plant Community Types and Boundaries of Waters of the United States, including Wetlands



Figure 3.7-1d Pear Tree Gulch Plant Community Types and Boundaries of Waters of the United States, including Wetlands

ces, Inc.

	Conner Creek	Valdor Gulch	Elkhorn	Pear Tree Gulch
Annual grassland	3.04	4.31	0.07	0.62
Barren	10.21	15.5	3.55	2.20
Foothill pine	1.49	5.29	0.00	0.83
Klamath mixed conifer	0.59	0.00	8.20	1.51
Mixed chaparral	0.26	0.14	0.12	1.04
Montane hardwood	0.00	0.60	0.40	0.04
Montane hardwood-conifer	0.58	5.17	11.84	0.00
Montane riparian	25.6	47.84	17.62	3.79
Open water	2.23	0.00	0.00	0.00
Perennial grassland	5.18	27.79	11.91	1.37
Ponderosa pine	0.06	0.00	0.00	0.00
Riverine	7.97	14.2	7.84	3.83
Urban	0.00	0.00	1.36	0.0
TOTAL	57.21	120.84	62.91	15.23

TABLE 3.7-1.

HABITAT TYPES PRESENT AT EACH SITE (ACRES)*

* adapted from Mayer and Laudenslayer Jr. 1988

Annual grasslands are productive wildlife habitat. Grassland bird species, such as the mourning dove (*Zenaida macroura*), savannah sparrow (*Passerculus sandwichensis*), and white-crowned sparrow (*Zonotrichia leucophrys*), as well as rodents, including the California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), California kangaroo rat (*Dipodomys californicus*), and deer mouse (*Peromyscus maniculatus*), forage on the seed crop this community provides. These species, in turn, attract predators such as the gopher snake (*Pituophis melanoleucus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and coyote (*Canis latrans*). Reptile species expected to occur here include the western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), western rattlesnake (*Crotalus viridis*), and yellow-bellied racer (*Coluber constrictor*).

<u>Barren.</u> Barren habitat occurs at all four sites. Barren land consists primarily of rock, pavement, and sand. Vegetation is usually not present, although sparse opportunistic grasses/forbs or weedy species may be present. This habitat provides few resources to wildlife species. Some species associated with adjacent habitats likely forage on the bare soil on the site to some extent, and killdeer (*Charadrius vociferus*) may nest here. However, use of this habitat by wildlife is expected to be limited.

<u>Foothill Pine</u>. Foothill pine habitat occurs at the Conner Creek, Valdor Gulch, and Pear Tree Gulch sites. The dominant overstory species present in this habitat is foothill pine (*Pinus sabiana*). Understory vegetation includes common manzanita (*Arctostaphylos manzanita*), buck brush (*Ceanothus cuneatus*), skunkbrush (*Rhus trilobata*), and poison oak (*Toxicodendron diversilobum*). The underlying herbaceous layer includes ripgut brome, cheatgrass, and false hedge-parsley. Numerous birds feed on the seeds of

foothill pine, including the northern flicker (*Colaptes auratus*), Steller's jay (*Cyanocitta stelleri*), acorn woodpecker (*Melanerpes formicivorus*), and band-tailed pigeon (*Columba fasciata*). The foliage, bark, and seeds also provide food for gray squirrels (*Sciurus griseus*), and black-tailed deer (*Odocoileus hemionus columbianus*) browse the foliage and twigs.

<u>Klamath Mixed Conifer.</u> Klamath mixed conifer habitat occurs at the Conner Creek, Elkhorn, and Pear Tree Gulch sites. Dominant tree species include Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) and ponderosa pine (*Pinus ponderosa*). Occasional broad leaved tees found in this habitat include canyon live oak (*Quercus chrysolepis*) and black oak (*Quercus kelloggii*).

Klamath mixed conifer habitat provides a wide array of nesting and foraging opportunities for wildlife. Species commonly found in this habitat include the mountain quail (*Oreotyx pictus*), hairy woodpecker (*Picoides villosus*), sharp-shinned hawk (*Accipiter striatus*), western gray squirrel, and gray fox (*Urocyon cinereoargenteus*). The leaf litter also provides habitat for the California kingsnake (*Lampropeltis zonata*) and ensatina (*Ensatina eschscholtzii*).

<u>Mixed Chaparral.</u> Mixed chaparral habitat occurs at the Conner Creek, Elkhorn, and Pear Tree Gulch sites. The dominant species present in this habitat include whiteleaf manzanita (*Arctostaphylos patula*) and buck brush. Mixed chaparral provides habitat for a wide variety of wildlife species. It provides seeds, fruit, and protection from predators and climate. In addition, it provides singing, roosting, and nesting sites for many species of birds, including the California quail (*Callipepla californica*), wrentit (*Chameae fasciata*), and Bewick's wren (*Thryomanes bewickii*). Mammals common in this habitat include the black-tailed jack rabbit (*Lepus californicus*), gray fox, coyote, and deer mouse. Reptiles that make use of this habitat include the western fence lizard and southern alligator lizard (*Elgaria multicarinata*).

<u>Montane Hardwood.</u> Montane hardwood habitat occurs in the Conner Creek, Elkhorn, and Pear Tree Gulch sites. Dominant tree species observed within this plant community include Pacific madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*), canyon live oak, and California black oak. Associated shrub species observed include common manzanita, buck brush, skunkbrush, snowberry (*Symphoricarpos albus* var. *laevigatus*), and poison oak. The underlying herbaceous layer includes ripgut brome, cheatgrass, blue wild rye (*Elymus glaucus*), silver bush lupine (*Lupinus albifrons*), purple sanicle (*Sanicula bipinnatifida*), and false hedge-parsley (*Torilis arvensis*).

Mast crops provided by montane hardwood forests are an important resource for many species, including the acorn woodpecker, Steller's jay, mountain quail, western gray squirrel, and black-tailed deer. In addition, cavities in mature trees provide nesting and denning habitat for species such as the northern flicker, western screech owl (*Otus kennicottii*), American kestrel, and Virginia opossum (*Didelphis virginiana*). In moist areas, many amphibians are found in the detrital layer, including ensatina and western skinks.

<u>Montane Hardwood-Conifer.</u> Montane hardwood conifer habitat occurs at all four sites. Dominant tree species observed in this plant community include Pacific madrone (*Arbutus menziesii*), bigleaf maple, ponderosa pine, foothill pine, Douglas-fir, canyon live oak (*Quercus chrysolepis*), and black oak. Shrub species observed include common manzanita, buck brush, cascara (*Rhamnus purshiana*), skunkbrush, snowberry, and poison oak. The underlying herbaceous layer includes ripgut brome, cheatgrass, blue wild rye, silver bush lupine, purple sanicle, and false hedge-parsley.

The variability of the canopy cover and understory vegetation makes montane hardwood-conifer communities suitable for numerous species of wildlife. Hollow trees and logs provide denning sites for mammals such as the coyote, while cavities in mature trees are used by cavity-dwelling species such as the acorn woodpecker, violet-green swallow (*Tachycineta thalassina*), northern flicker, great horned owl (*Bubo virginianus*), raccoon (*Procyon lotor*), and pallid bat (*Antrozous pallidus*). In addition, raptors, such as the red-tailed hawk, construct nests in the upper canopy of mature trees. Moreover, mast crops and conifer seeds are an important food source for many birds as well as mammals including the Steller's jay, acorn woodpecker, California quail, black-tailed deer, and western gray squirrel. In moist areas, many amphibians are found in the detrital layer, including ensatina and western fence lizards. Snakes, including the western rattlesnake and sharp-tailed snake (*Contia tenuis*), also occur in this community.

Montane Riparian. Montane riparian habitat occurs at all four sites. The montane riparian community is composed of typical riparian plant species that occur in Trinity County. Dominant tree species include bigleaf maple, white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), and Goodding's black willow (*Salix gooddingii*). Understory species include mugwort (*Artemisia douglasiana*), virgin's bower (*Clematis ligusticifolia*), American dogwood (*Cornus sericea*), Oregon golden-aster (*Heterotheca oregona*), dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*), white sweet clover (*Melilotus alba*), musk monkeyflower (*Mimulus moschatus*), straggly gooseberry (*Ribes divaricatum*), Himalayan blackberry (*Rubus discolor*), California blackberry (*Rubus ursinus*), narrow-leaved willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), and California wild grape (*Vitis californica*).

Riparian woodlands represent some of the most important wildlife habitats due to their high floristic and structural diversity, high biomass (and therefore high food abundance), and high water availability. In addition to providing breeding, foraging, and roosting habitat for a diverse array of animals, riparian habitats also provide movement corridors for some species, connecting a variety of habitats throughout a region.

The leaf litter, fallen tree branches, and logs associated with the riparian communities in the project area provide cover for the western toad (*Buto boreas*) and Pacific chorus frog (*Pseudacris regilla*). The western fence lizard, western skink, and southern alligator lizard are also expected to occur here. Common species nesting and foraging primarily in the riparian tree canopy include the tree swallow (*Tachycineta bicolor*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), and Nuttall's and downy woodpeckers (*Picoides nuttallii* and *Picoides pubescens*, respectively). Other resident species, such as the spotted towhee (*Pipilo maculatus*) and song sparrow (*Melospiza melodia*), nest and forage on or very close to the ground, usually in dense vegetation. A variety of mammals also occur in riparian communities, including the deer mouse, raccoon, and Virginia opossum.

<u>Open Water.</u> Open water habitat occurs only at the Conner Creek site. It consists of a man-made deepwater area that exhibits perennial inundation. Vegetation is limited because of the perennial inundation. Open water provides foraging habitat to waterbirds, such as the mallard and Canada goose (*Branta canadensis*). In addition, black phoebes (*Sayornis nigricans*), tree swallows, and other birds and bats that feed on insects over water sources likely forage over this wetland. Further, it provides habitat for amphibians and reptiles such as the western toad, Pacific chorus frog, and common garter snake (*Thamnophis sirtalis*).

<u>Perennial Grassland.</u> Perennial grassland habitat occurs at the Conner Creek, Valdor Gulch, and Elkhorn sites. Species present in this habitat include a variety of introduced and native perennial species, including sedge (*Carex* sp.) and bulbous bluegrass (*Poa bulbosa*). The suite of animals using this habitat is similar to that found in the annual grasslands. For both grasslands, the value of the habitat is enhanced by the variety of habitats surrounding it, which provide shelter for species that forage in the open grasslands. Perennial grasslands support several herbivores, including black-tail deer, California ground squirrels, Botta's pocket gophers, deer mouse, black-tailed jackrabbits, and brush rabbits (*Sylvilagus bachmani*). These species attract predators that breed in adjacent habitats, such as the bobcat (*Lynx rufus*), coyote, red-tailed hawk, and great-horned owl. Reptile species expected to occur here include the western fence lizard, western skink, and gopher snake.

<u>Ponderosa Pine.</u> Ponderosa pine habitat occurs at the Conner Creek and Pear Tree Gulch sites. The dominant overstory species present in this habitat is ponderosa pine. Understory vegetation includes common manzanita, buck brush, and poison oak. The underlying herbaceous layer includes ripgut brome and cheatgrass. Ponderosa pine needles, cones, buds, pollen, twigs, seeds, and associated fungi and insects provide food for many species of birds and mammals, including the mountain quail, western gray squirrel, black-tailed deer, and Allen's chipmunk (*Tamias senex*), and the needles are eaten by blue grouse (*Dendragapus obscurus*). Mature trees provide nesting habitat for raptors such as the sharp-shinned hawk and red-tailed hawk, while snags and hollow logs provide shelter for species such as the Virginia opossum and western spotted skunk (*Spilogale gracilis*).

<u>Riverine.</u> Riverine habitat is limited to the open water channel of the mainstem Trinity River, which flows through all four sites. Riverine habitat is dominated by run and riffle habitats, with boulder, cobble, gravel, and sand substrates. Vegetation within the active river channel is sparse, with occasional clumps of sedges (*Carex* spp.). The Trinity River provides potential habitat for several native and introduced fish species (see Section 3.6). Amphibians and reptiles expected to occur here include the Pacific chorus frog, western toad, bullfrog (*Rana catesbeiana*), and northwestern pond turtle (*Clemmys marmorata marmorata*). In addition, birds such as the mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), osprey (*Pandion haliaetus*), and belted kingfisher (*Ceryle alcyon*) may forage here. Mammals expected to occur in this habitat include the river otter (*Lutra canadensis*), and beaver (*Castor canadensis*), and bats, including the Yuma bat (*Myotis yumanensis*) and big brown bat (*Eptesicus fuscus*), forage above this habitat during summer evenings.

<u>Urban.</u> Urban habitat occurs at the Valdor Gulch and Elkhorn sites. Urban plant communities vary and consist of introduced species and/or native species associated with human development(s). Species composition varies with planting design and climate. Urban habitats are not limited to any particular physical setting. The wildlife species most often associated with urban areas are those that are most tolerant of periodic human disturbances, including several introduced species, such as European starlings (*Sturnus vulgaris*), rock doves (*Columba livia*), and house mice (*Mus musculus*). Native species that are able to use these habitats include the western fence lizard, American robin (*Turdus migratorius*), Brewer's blackbird (*Euphagus cyanocephalus*), northern mockingbird (*Mimus polyglottos*), mourning dove, house finch (*Carpodacus mexicanus*), California ground squirrel, black-tailed jackrabbit, and western spotted skunk. Bats that forage in nearby habitats may make use of small cavities around the eaves of structures.

Special-Status Plant Species

For the purposes of this evaluation, special-status plant species are vascular plants that are (1) designated as rare by the CDFG or the USFWS or are listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (ESA); (2) are proposed for designation as rare or listing as threatened or endangered; and/or (3) are state or federal candidate species for listing as threatened or endangered. Other special-status plant species are designated as Species of Concern by the USFWS and/or are included on the California Native Plant Society (CNPS) Lists 1A, 1B, or 2 (California Native Plant Society 2001), the BLM list of sensitive species, or the USFS Region 5 list of sensitive species.

Plant species designated "BLM sensitive" are not federally or state-listed as endangered or threatened, nor are they proposed or candidates for listing, but they are designated by the BLM State Director for special management consideration. The BLM Manual Section 6840 defines sensitive species as "...those species that are (1) under status review by the USFWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. The BLM's policy provides sensitive species with the same level of protection afforded federal candidate species.

A USFS "sensitive species" is any species of plant that has been recognized by the Regional Forester to need special management in order to prevent it from becoming threatened or endangered. The National Forest Management Act (NFMA) requires the USFS to "provide for a diversity of plant and animal communities" [16 U.S.C. 1604(g)(3)(B)] as part of their multiple use mandate. The USFS must maintain "viable populations of existing native and desired non-native species in the planning area" (36 CFR 219.19). The Sensitive Species program is designed to meet this mandate and demonstrate the USFS commitment to maintaining biodiversity on National Forest System lands.

A list of special-status plant species considered for the project was compiled by performing searches of the California Natural Diversity Database (CNDDB) and CNPS Electronic Inventory database (Appendix J), informally consulting with CDFG and USFWS, and reviewing biological literature for the project region, including the BLM special-status plants list for the Redding Field Office (Bureau of Land Management 2005). A list of federal special-status species potentially occurring in Trinity County was obtained from the USFWS on November 1, 2005. It includes species potentially occurring in Trinity County that currently have endangered, threatened, or candidate status (Appendix E). This list identified one special-status plant species, McDonald's rock-cress (*Arabis macdonaldiana*), as being potentially present.

The list of special-status plant species was refined based upon habitat parameters, including the habitats known to occur in the project sites and their elevational limits (1,362 to 1,457 feet). Species that are known to occur in the vicinity of the project but in habitats not present at the sites were not included in the final list. Additionally, species occurring only at elevations over 2,000 feet were not included. Based

on this analysis, 20 special-status plant species were identified as potentially occurring at the project sites (Table 3.7-2).

Vegetation Surveys

Floristic (vegetation) inventories and special-status plant surveys were conducted on June 15, 21, and 22, 2002; May 15, 16, and 20, 2003; June 6, 11, and 12, 2003; July 17 and 22, 2003; and August 19, 2003. These surveys covered the entirety of the Elkhorn and Pear Tree Gulch sites and the majority of the Conner Creek and Valdor Gulch sites (the boundaries of these two sites have been slightly enlarged since the surveys were performed). The botanical studies were conducted in accordance with guidelines developed by the CDFG (2000). Surveys were conducted at the appropriate season when special-status plant species were most likely to be identifiable (i.e., the blooming period). A comprehensive list of observed plant species at the four sites is included in Appendix K. No special-status plant species were detected at any of the sites.

A habitat analysis of those portions of the Conner Creek and Valdor Gulch sites that were not surveyed indicates that, due to a lack of suitable habitat, no federally listed plant species are likely to occur. However, there is a low probability that two non-listed special-status plant species may occur in these areas (see Table 3.7-2).

Common Name (Scientific Name)	Status ¹ (Fed/State/ CNPS)	General Habitat	Flowering Period	Comments
Federally or State-Lis	sted Species			
Red Mountain catchfly (<i>Silene campanulata</i> ssp. <i>campanulata</i>)		Chaparral and lower montane coniferous forest; usually on rocky serpentinite (1,390- 6,850 feet).	April-July	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Other Special-Status	Species			
Brownish beaked- rush (<i>Rhynchospora</i> <i>capitellata</i>)	//2	Meadows, marshes, swamps; moist areas in montane coniferous forest (1,490-6,600 feet).	July-August	Suitable habitat occurs at the Conner Creek site. However, it was not observed during protocol- level surveys of the sites.
Bottlebrush sedge (<i>Carex hystericina</i>)	//2*	Marshes, swamps, and in wet places along stream banks (1,960– 2,000 feet).	June	Suitable habitat occurs along the Trinity River at all four sites. However, it was not observed during protocol-level surveys of the sites.
Canyon Creek stonecrop (<i>Sedum paradisum</i>) SC//1B* [†] Chaparral upland an forests; gr substrate feet).		Chaparral, broad-leafed upland and coniferous forests; granitic, rocky substrate (980-6,100 feet).	May-July	Suitable habitat occurs at all four sites. It was not observed during protocol- level surveys, but there is a low probability that it occurs in the portions of the Conner Creek and Valdor Gulch sites that were not surveyed.

TABLE 3.7-2.

SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR ANALYSIS

TABLE 3.7-2.

Common Name (Scientific Name)	Status ¹ (Fed/State/ CNPS)	General Habitat	Flowering Period	Comments
Clustered lady's- slipper (<i>Cypripedium</i> fasciculatum)	SC//4* [†]	Coniferous forest habitat on serpentinite seeps and stream banks; a BLM Survey and Manage species (325-7,990 feet).	March-July	Suitable habitat does not exist within the proposed project study area due to the lack of serpentine soils.
Dudley's rush (<i>Juncus dudleyi</i>)	//2	Wetlands or other wet areas in lower montane coniferous forest habitat (1,490-6,560 feet).	July-August	Suitable habitat occurs at the Conner Creek, Valdor Gulch, and Elkhorn sites. However, it was not observed during protocol- level surveys of the sites.
Elongate copper- moss (<i>Mielichhoferia</i> <i>elongata</i>)	//2	Cismontane woodland; grows on soil with a high content of copper and iron that is toxic for higher plants (1,600- 4,300 feet).		Suitable habitat occurs at the Conner Creek, Valdor Gulch, and Elkhorn sites. Known to occur within 5 miles of the sites (California Department of Fish and Game 2005), but was not observed during protocol-level surveys.
Flaccid sedge (<i>Carex leptalea</i>)	//2	Marshes, swamps, wet meadows, bogs, fens, and in wet places along stream banks (0–2,300 feet).	May-July	Suitable habitat occurs along the Trinity River at all four sites. However, it was not observed during protocol-level surveys of the sites.
Flagella-like atractylocarpus (Campylopodiella stenocarpa)	//2	Cismontane woodland (325-1,640 feet)		This species is known to occur within 5 miles of all four of the sites (California Department of Fish and Game 2005). However, it was not observed during protocol-level surveys.
Fox sedge (<i>Carex vulpinoidea</i>)	//2	Freshwater marshes, swamps, and riparian woodlands (100-4,000 feet).	May-June	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Heckner's lewisia (<i>Lewisia cotyledon</i> var. <i>heckneri</i>)	SC//1B*	Outcrops and cliffs of various rock types, often near streams or rivers, in part to full shade, usually on northern aspects (730- 6,900 feet). Occurs in a variety of forest types.	May-July	This species is known to occur within 5 miles of all four of the sites (California Department of Fish and Game 2005). It was not observed during protocol- level surveys, but there is a low probability that it occurs in the portions of the Conner Creek and Valdor Gulch sites that were not surveyed.

TABLE 3.7-2.

SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR ANALYSIS

Common Name (Scientific Name)	Status ¹ (Fed/State/ CNPS)	General Habitat	Flowering Period	Comments
Howell's lewisia (<i>Lewisia cotyledon</i> var. <i>howellii</i>)	SC//3	Rocky places in broadleaf upland and lower montane coniferous forests, chaparral, and cismontane woodland (490-6,600 feet).	April-July	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Howell's montia (<i>Montia howellii</i>)	//2 [†]	Early-successional, vernally moist habitats, often on compacted fine sediments (0-2,400 feet).	March-May	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Mountain lady's- slipper (<i>Cypripedium montanum</i>)	//4*†	Cismontane woodland and broad-leafed upland and montane coniferous forest habitat; a BLM Survey and Manage species (605-7,300 feet).	March- August	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Northern clarkia (<i>Clarkia borealis ssp. borealis</i>)	//1B* [†]	Chaparral, cismontane woodland, and lower montane coniferous forests (1,300-4,400 feet).		Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Oregon fireweed (<i>Epilobium</i> oreganum)	SC//1B* [†]	Wet, gently sloping meadows, bogs, pond margins, and banks of slow-moving streams, in full sun to part shade (1,640-7,350 feet).	June- September	Suitable habitat occurs around the pond at the Conner Creek site. However, it was not observed during protocol- level surveys.
Stebbins' harmonia (<i>Harmonia stebbinsii</i>)	SC//1B* [†]	Shallow, rocky, ultramafic substrates; edges between timber and brush, roadsides on gently south-facing slopes (1,300-5,200 feet).	May-July	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Thread-leaved beardtongue (<i>Penstemon</i> <i>filiformis</i>)	SLC//1B* [†]	Rocky openings in lower montane woodlands and coniferous forests on ultramafic substrates (1,475-6,005 feet).	June-July	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.
Tracy's eriastrum (<i>Eriastrum tracyi</i>)	/R/1B [†]	Chaparral and cismontane woodland (1,030-3,200 feet).	June-July	Suitable habitat occurs at all four sites. However, it was not observed during protocol-level surveys of the sites.

TABLE 3.7-2.SPECIAL-STATUS PLANT SPECIES CONSIDERED FOR ANALYSIS

Common Name (Scientific Name)	Status ¹ (Fed/State/ CNPS)	General Habitat	Flowering Period	Comments
Wolf's evening primrose (<i>Oenothera wolfii</i>)	//1B	Coastal habitats and lower montane coniferous forests; usually on sandy, mesic substrates (9-2,625 feet).	May- October	Suitable habitat occurs at the Conner Creek site. However, it was not observed during protocol- level surveys of the sites.

¹Status Codes:

Federal and State Codes: E = Endangered; T = Threatened; SC = Species of Concern SLC = Species of Local Concern R = Rare

CNPS Codes:

List 1B = Rare, Threatened or Endangered in CA and elsewhere List 2 = Rare, Threatened, or Endangered in CA but common elsewhere List 3 = More information is needed

List 4 = Limited distribution

* = BLM Sensitive

[†] = USFWS Sensitive

Survey and Manage Species

At the time the technical studies for the proposed project were initiated, BLM was required to conduct surveys for Survey and Manage species that were specifically listed in the Northwest Forest Plan ROD (U.S. Department of Agriculture and U.S. Department of the Interior 1994). Subsequently, in 2001, the Department of Agriculture and Department of Interior issued a ROD for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (U.S. Department of Agriculture and U.S. Department of Interior 2001). A Supplemental Environmental Impact Statement (SEIS) was prepared to examine an alternative "that replaces the Survey and Manage mitigation requirements with existing USFWS and BLM special status species programs to achieve the goals of the Northwest Forest Plan through a more streamlined process. A new ROD was issued by the agencies in March 2004 (U.S. Department of Agriculture and Department of the Interior 2004) that documented the decision to remove or modify the Survey and Manage Mitigation Measure Standards and Guidelines. As a result, the implementing agencies discontinued the Survey and Manage program and transferred selected Survey and Manage taxa to agency Special-Status Species Programs (SSSP). However, on January 11, 2006, a U.S. District Court Judge vacated the administration's decision to eliminate the Survey and Manage standard of the Northwest Forest Plan. This decision reinstates the Survey and Manage standard.

Joe Molter, botanist for the BLM, surveyed selected sites involving federal lands associated with the project area for vascular plant species included in the Survey and Manage Standards of the Northwest Forest Plan. A list of vascular plant species with the potential to occur in the proposed area was compiled by performing an Interagency Species Management System (ISMS) Database search and reviewing the Survey Protocols for the species listed on Table 1-1 of the amended ROD of the Northwest Forest Plan (U.S. Department of Agriculture and U.S. Department of Interior 2001) and USFS and BLM visions for the 2001 Survey and Manage Annual Species Review (USDA Forest Service and Bureau of Land Management 2002). This list included two species with the potential to occur in the project area: clustered lady's slipper and mountain lady's slipper. Neither species was observed during the survey of the sites in 2002.

Jeanne McFarland, botanist for BLM's Arcata Field Office, conducted pre-disturbance surveys in the project area for nonvascular plants and fungi, collectively known as cryptograms, in compliance with the Northwest Forest Plan ROD. The surveys, which were conducted during the summer of 2002, consisted of a close inspection of all suitable substrates for the fungus *Bridgeoporus nobilissimus* (the only pre-disturbance Survey and Manage fungus). No Survey and Manage cryptogamic species were present within the study limits, and no appropriate habitat for these species was identified within the study limits on public lands.

Non-Native and Invasive Plant 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 (MOU) and are subject to statutory and regulatory weed control requirements. The lead agency for the WMAs is the California Department of Food and Agriculture (CDFA).

Cooperators in the Trinity County WMA include the Trinity County Department of Agriculture and the USDA Agricultural Research Service. Trinity County has in place weed eradication programs for diffuse knapweed (*Centaurea diffusa*), bull thistle (*Cirsium vulgare*), dalmatian toadflax, Klamathweed (*Hypericum perforatum*), plumeless thistle (*Carduus acanthoides*), scotch thistle (*Onopordum tauricum*), and yellow star-thistle (*Centaurea solstitialis*).

A number of non-native and invasive plant species were observed during the botanical surveys in 2002 and 2003. These species are typically opportunistic and will colonize particularly in areas of disturbance. The CDFA recognizes invasive species as being an A-, B-, or C-listed plant:

- A = Eradication, quarantine, or other holding action at the state/county level.
- B = Intensive control or eradication, where feasible, at the county level.
- C = Control or eradication as local conditions warrant, at the county level.

Non-native and/or invasive plant species observed at the four rehabilitation sites include the A-list species dalmatian toadflax and tree of heaven (*Ailanthus altimssima*) and the C-list species yellow star-thistle, Bermuda grass (*Cynodon dactylon*), and Klamathweed. The known locations of dalmation toadflax and yellow star-thistle are shown in Figure 3.7-2a-d. The most apparent of these non-native/invasive plants at the sites are tree of heaven and yellow star-thistle.

Special-Status Wildlife Species

For the purposes of this evaluation, special-status wildlife species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) are proposed or petitioned for federal listing as threatened or endangered; and/or (3) are state or federal candidates for listing as threatened or endangered. Other special-status wildlife species are identified by the USFWS as Species of Concern, identified by the CDFG as Species of Special Concern or California Fully Protected Species, and/or designated as BLM or USFWS sensitive.



North State Resources, Inc.

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78



Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.7-2b Valdor Gulch Non-native and Invasive Plant Species

North State Resources, Inc.



North State Resources, Inc.

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

Figure 3.7-2c Elkhorn Non-native and Invasive Plant Species



orth State Resources, Inc.

Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78

A list of special-status wildlife species considered for analysis in this environmental document was compiled by performing a CNDDB database search (Appendix J), conducting informal consultations with the CDFG and USFWS, and reviewing biological literature for the general area. Habitat information for special-status wildlife species was excerpted from:

- the California Department of Fish and Game, Habitat Conservation Planning Branch website: http://www.dfg.ca.gov/hcpb/species/species.shtml
- Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes 1994)
- California's Wildlife, Volume II: Birds (Zeiner et al. 1990a)
- California's Wildlife, Volume III: Mammals (Zeiner et al. 1990b)
- California Wildlife Habitat Relationships Program, Version 8.0 (California Department of Fish and Game 2002)

The special-status animal species that occur in the project vicinity are described in Table 3.7-3 and more detailed species accounts are provided in Appendix L. Federal and state status designations and general habitat requirements for each species are also provided in the table. A comments section provides information on whether suitable habitat exists at the four sites. Conclusions presented in this table are based on the knowledge of local professional biologists and historic survey information.

Some of the species listed in Table 3.7-3 are not expected to occur in the project area because of a lack of suitable habitat or because the rehabilitation sites are outside the known distributional range of the species. These species include the California red-legged frog (*Rana aurora draytonii*), Cascades frog (*Rana cascadae*), marbled murrelet (*Brachyramphus marmoratus*), western yellow-billed cuckoo (*Coccyzus americanus*), bank swallow (*Riparia riparia*), small-footed myotis bat (*Myotis ciliolabrum*), fringed myotis bat (*Myotis thysanodes*), and California wolverine (*Gulo gulo luteus*). Some special-status species may occur on the sites only as uncommon to rare visitors, migrants, or transients, but are not expected to breed there. These species include the American peregrine falcon (*Falco peregrinus anatum*), black swift (*Cypseloides niger*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*), Townsend's western big-eared bat (*Corynorhinus townsendii*), and Pacific fisher (*Martes pennanti pacifica*).

Special-status species that may breed in the project area include the Trinity bristle snail (*Monadenia setosa*), foothill yellow-legged frog (*Rana boylii*), tailed frog (*Ascaphus truei*), northwestern pond turtle, little willow flycatcher (*Empidonax traillii brewsteri*), Vaux's swift (*Chaetura vauxi*), California yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), northern spotted owl (*Strix occidentalis caurina*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), northern goshawk (*Accipiter gentiles*), osprey (*Pandion haliaetus*), pallid bat (*Antrozous pallidus*), long-eared myotis bat (*Myotis evotis*), Yuma myotis bat (*Myotis yumanensis*), and ring-tailed cat (*Bassariscus astutus*).

Wildlife Surveys

Personnel from the USFS Redwood Sciences Laboratory and USFWS performed baseline surveys from April through October 2003 for herpetofauna at the four rehabilitation sites (Welsh, Ashton, and Bettaso 2003). Personnel from the Redwood Sciences Laboratory also conducted riparian/riverine point

Common Name (Scientific Name)	Status ¹ (Fed/State)	General Habitat Description	Present in Project Sites?				
Federally or State-Listed S	Federally or State-Listed Species						
Trinity bristle snail (Monadenia setosa)	SC/T	Riparian corridors and canyon slopes with dense deciduous understory in Trinity County.	May be present. Suitable habitat was not detected in work areas adjacent to the river. The species was not detected in a 2002 survey and there have been no incidental observations. Intermittent riparian habitat may be available but no work is planned in these areas.				
California red-legged frog (Rana aurora draytonii)	T/SC	Requires aquatic habitat for breeding; also uses a variety of other habitat types, including riparian and upland areas.	Absent. Sites are outside the known range of this species.				
American peregrine falcon (Falco peregrinus anatum)	SC/E, FP	Forages in many habitats; requires cliffs for nesting.	Absent as breeder. Sites lack suitable nesting habitat, but may occur as forager.				
Bald eagle (Haliaeetus leucocephalus)	T/E	Uncommon to common in riverine and open wetland habitats. Requires large bodies of water or free flowing rivers with abundant fish for foraging. Nests in large, live trees that are usually near water and free from human disturbance. Roosts communally in winter in dense, remote conifer stands.	Absent as breeder. Suitable nesting habitat is not present at any of the sites due to the lack of dense, large trees and the moderate level of human disturbance; however, the species may forage at the sites.				
Bank swallow (<i>Riparia riparia)</i>	SC/T	Colonial nester on vertical banks or cliffs with fine- textured soils and near water.	Absent. The project area does not contain suitable habitat.				
Little willow flycatcher (Empidonax traillii brewsteri)	SC/E [†]	Rare summer resident in wet meadow and montane riparian habitats at 2,000 to 8,000 feet elevation.	Absent as breeder. No breeding pairs located during protocol-level surveys (Miller, Ralph, and Herrera 2003). May occur on sites as occasional migrants.				
Marbled murrelet (Brachyramphus marmoratus)	T/E	Marine subtidal and pelagic habitats; requires dense, mature forests of redwood and Douglas-fir for breeding.	Absent. Sites are outside the known range of this species.				
Northern spotted owl (Strix occidentalis caurina)	T/	In northern California, resides in large stands of old growth, multi-layered mixed conifer, redwood, and Douglas-fir habitats	Absent. 2004 surveys determined that no northern spotted owls occur within 0.5 mile of project sites (Miller et al. 2005)				

Common Name (Scientific Name)	Status ¹ (Fed/State)	General Habitat Description	Present in Project Sites?
Western yellow-billed cuckoo (Coccyzus americanus occidentalis)	C/E [†]	Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter Co., the South Fork of the Kern River in Kern Co., and along the Santa Ana, Amargosa, and lower Colorado rivers in cottonwood/willow riparian forest.	Absent. Project area is outside the currently known range of this species.
California wolverine (Gulo gulo luteus)	SC/T, FP †	A variety of habitats within the elevations of 1,600 and 14,200 feet. Most commonly inhabits open terrain above timberline.	May be present. Denning would not likely occur at the project sites due to the moderate number of human residences. Wolverine may, on rare occasions, use the Trinity River as a travel corridor.
Pacific fisher (Martes pennanti pacifica)	C/SC* [†]	Dens and forages in intermediate to large stands of old-growth forests or mixed stands of old-growth and mature trees with greater than 50% canopy closure. May use riparian corridors for movement.	May be present. Not expected to breed on the any of the sites but may use the Trinity River as a travel corridor. Species is known to occur within 5 miles of the sites (California Department of Fish and Game 2005).
Other Special-Status Spec	ies		
Cascades frog (Rana cascadae)	SC/SC^{\dagger}	Open coniferous forests along the sunny, rocky banks of ponds, lakes, streams, and meadow potholes. From 2,600 to 9,000 feet elevation in Cascades and Trinity mountains.	Absent. The rehabilitation sites are below the known elevational range of this species.
Foothill yellow-legged frog (Rana boylii)	SC/SC* [†]	Cool, fast-moving, rocky streams in a variety of habitats.	May be present. Riverine and riparian communities within all four sites provide suitable habitat. The species is known to occur in the Trinity River from Lewiston Dam to the north fork of the Trinity River (California Department of Fish and Game 2005). It was detected at all four sites during surveys in 2003 (Welsh, Ashton, and Bettaso 2003)
Tailed frog (Ascaphus truei)	SC/SC	Clear, rocky, swift, cool perennial streams in densely forested habitats.	May be present. Suitable habitat occurs in the project area; however, the species was not detected during surveys in 2003 (Welsh, Ashton, and Bettaso 2003).

Common Name (Scientific Name)	Status ¹ (Fed/State)	General Habitat Description	Present in Project Sites?
Northwestern pond turtle (Clemmys marmorata marmorata)	SC/SC^{\dagger}	Slow water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Require an upland oviposition (egg laying) site in the vicinity of the aquatic site.	May be present. Riverine and riparian habitats along the Trinity River at all four sites provide suitable habitat. The species was detected in the Conner Creek, Valdor Gulch, and Pear Tree Gulch sites during surveys in 2003 (Welsh, Ashton, and Bettaso 2003).
Black swift (Cypseloides niger)	SC/SC	Nests in moist crevice or cave or sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons; forages widely over many habitats.	Absent as breeder. Project area does not provide suitable breeding habitat; however, may forage over the sites as a migrant.
California yellow warbler (Dendroica petechia brewsteri)	/SC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.	May be present. Montane riparian habitat at all four sites provides suitable nesting and foraging habitat, and the species was detected at all four sites during 2003 surveys (Miller, Ralph, and Herrera 2003).
Cooper's hawk (Accipiter cooperii)	/SC/	Nests in woodlands; forages in many habitats in winter and during migration.	May be present. Suitable nesting and foraging habitat is present at all four sites.
Golden eagle (Aquila chrysaetos)	/SC, FP	Breeds on cliffs or in large trees or electrical towers, forages in open areas.	Absent as breeder. Suitable nesting habitat is absent from the sites; however, the species may occur as a forager.
Merlin (Falco columbarius)	/SC	Uses many habitats in winter and during migration.	Absent as breeder. Rehabilitation sites are outside the breeding range of this species; however, it may occur on the sites as a migrant.
Northern goshawk (Accipiter gentiles)	SC/SC^{\dagger}	Breeds in dense, mature conifer and deciduous forests, interspersed with meadows, other openings and riparian areas; nesting habitat includes north- facing slopes near water.	May be present. Suitable nesting and foraging habitat is present at all four sites.
Osprey (Pandion haliaetus)	/SC	Ocean shorelines, lake margins, and large, open river courses for both nesting and wintering habitat.	May be present. Suitable nesting and foraging habitat is present at all four sites, and osprey were detected at the Conner Creek site during 2003 surveys. However, nests are not known to occur in the area.
Sharp-shinned hawk (Accipiter striatus)	/SC/	Nests in dense woodlands, typically on north facing slopes near water. Forages in many habitats in winter and during migration.	May be present. Suitable nesting and foraging habitat is present within the project area.
Vaux's swift (Chaetura vauxi)	SC/SC	Prefers redwood and Douglas-fir habitats; nests in hollow trees and snags or, occasionally, in chimneys; forages aerially.	May be present. Suitable nesting (Douglas-fir) and foraging habitat is present at all four sites.

Common Name (Scientific Name)	Status ¹ (Fed/State)	General Habitat Description	Present in Project Sites?	
Yellow-breasted chat (Icteria virens)	/SC	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.	May be present. Montane riparian habitat at all four sites provides suitable nesting and foraging habitat, and the species was detected at all four sites during 2003 surveys (Miller, Ralph, and Herrera 2003).	
Fringed myotis (Myotis thysanodes)	SC/*	Mesic habitats, roosting in caves, mines, tunnels, and buildings. Roosts typically in valley foothill hardwood and hardwood-conifer habitats, but forages in open, early-successional stage habitats near water.	Absent. The project area is outside the known elevation range for this species.	
Long-eared myotis (Myotis evotis)	SC/*	Found in most habitats, but prefers coniferous woodlands. Roosts in buildings, crevices, spaces under bark, and in snags. Forages among trees and over brush, usually in close association with water.	May be present. Suitable roosting and foraging habitat is present at all four sites.	
Oregon snowshoe hare	/SC	Montane riparian areas with thickets of deciduous trees and dense conifer thickets in Cascade and Trinity Mountains. In northern California, occur only in areas that have snow in the winter (California Department of Fish and Game 1986).	Absent. Suitable habitat not present in project area.	
Pallid bat (Antrozous pallidus)	/SC* [†]	Forages over many habitats; roosts in buildings, large oaks or redwoods, rocky outcrops and rocky crevices in mines and caves.	May be present. Suitable roosting and foraging habitat is present within the project area.	
Ring-tailed cat (Bassariscus astutus)	/FP	Riparian habitats and brush stands of most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests.	May be present. Montane riparian habitat at all four sites provides suitable breeding and foraging habitat.	
Small-footed myotis (Myotis ciliolabrum)	SC/*	Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water from sea level to 8,900 feet. Forages in arid upland grasslands, open woodlands, and over water. Roosts in caves, mines, buildings, bridges, rock crevices, and under tree bark.	Absent. The project area is outside the currently known range of this species.	

TABLE 3.7-3

SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS

Common Name (Scientific Name)	Status ¹ (Fed/State)	General Habitat Description	Present in Project Sites?
Townsend's western big- eared bat (Corynorhinus townsendii)	SC/SC* [†]	Roosts in colonies in caves, mines, tunnels, or buildings in mesic habitats. Forages along habitat edges, gleaning insects from bushes and trees. Habitat must include appropriate roosting, maternity, and hibernacula sites free from disturbance by humans.	May be present. Sites do not contain suitable roosting habitat; however, the species may be present as a forager.
Yuma myotis <i>(Myotis yumanensis)</i>	SC/*	Forages over water such as ponds, streams, stock tanks in open woodlands. Roosts in buildings, caves, mines, abandoned swallow nests, bridges, and rock crevices. Common and widespread in California.	May be present. Sites do not contain suitable roosting habitat; however, the species may be present as a forager.

¹Status Codes:

<u>Federal and State Codes:</u> E = Endangered; T = Threatened; C = Candidate; SC = Species of Concern (Federal); Species of Special Concern (State); PD = Proposed for Delisting; D = Delisted (status to be monitored for 5 years); FP = California Fully Protected species

* = BLM Sensitive

[†] = USFWS Sensitive

count bird surveys and riverine mammal surveys at each of the rehabilitation sites from May through October 2003 (Miller, Ralph, and Herrera 2003). For species that were detected during the surveys, survey results are included below in the descriptions of the species.

A habitat assessment for the northern spotted owl was conducted in and around the four sites in 2003 (North State Resources 2003). The assessment was conducted within a 0.25-mile buffer of the site boundaries at the time of the surveys. The goal of the assessment was to identify suitable northern spotted owl nesting, roosting, and foraging habitat. The majority of the habitat surveyed was not suitable for nesting, roosting, or foraging. At the Elkhorn site, however, the river canyon begins to close and the north aspect slope on the south side of the river is heavily forested with conifer habitat. This habitat type extends west into the area surveyed for the Pear Tree Gulch site. This habitat provides potential nesting, roosting, and foraging habitat for the northern spotted owl. Consequently, the RSL conducted protocol northern spotted owl surveys within 0.5 mile of each Canyon Creek project site during spring 2004 (Miller and Herrera 2005). No owls were detected.

Survey and Manage Species

As discussed above, on January 11, 2006 a U.S. District Court Judge vacated the administration's decision to eliminate the Survey and Manage standard of the Northwest Forest Plan. This decision reinstates the Survey and Manage standard. A list of wildlife species with the potential to occur in the proposed area was compiled by performing an Interagency Species Management System (ISMS) Database search and reviewing the Survey Protocols for the species listed on Table 1-1 of the amended ROD of the Northwest Forest Plan (U.S. Department of Agriculture and U.S. Department of Interior 2001) and USFS and BLM visions for the 2001 Survey and Manage Annual Species Review (USDA Forest Service and Bureau of Land Management 2002). The study limits for the proposed project includes public lands managed by BLM.

Pre-disturbance surveys for special-status mollusks were conducted on the sites during the spring 2001 and fall 2002 survey periods. No sensitive mollusks were located during either visit. Much of the site was underwater (and unsuitable for mollusk habitat) during May 2002 because of high Trinity River flows. The public lands within the sites were determined to be unsuitable as BLM sensitive mollusk habitat.

Jurisdictional Waters (including Wetlands)

Regional Setting

Although information on the historic location and function of wetlands in the vicinity of the proposed project is limited, Section 3.3 describes the historic dredging activities that occurred throughout the sites. These activities substantially modified the character and function of wetlands prior to construction of the TRD. An assessment of the geomorphic features within the sites suggests that prior to the dredging activities, the floodplain of the Trinity River was much larger than what has developed in association with the construction and operation of the TRD since 1964. Based on these historic assumptions, wetland acreage has likely declined following dam construction, in part because reduced flows now inundate less of the floodplain. Fringe strands of freshwater emergent vegetation, scrub-shrub, and forested wetlands now occur intermittently, where a wider belt of wetland likely

existed under pre-dam conditions. The reduction in alternate point bars has also reduced post-dam wetland acreage by curtailing formation of side channels and other meander-related features.

Local Setting

NSR wetland scientists conducted a delineation of jurisdictional waters of the United States within the boundaries of the sites. (Jurisdictional waters are waters under the jurisdiction of the U.S. Army Corps of Engineers [Corps].) Field observations were conducted between June 19 and September 25, 2002, between March 8 and 10, 2004, and during September 2004. The delineation was conducted according to the methodology described in the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). A three-parameter approach (i.e., vegetation, soils, and hydrology) was used to identify and delineate the boundaries of jurisdictional wetlands.

Jurisdictional wetland features were mapped on aerial photographs for each site (1 inch = 200 feet scale). Table 3.7-4 provides a summary of the types and acreages of Waters of the United States occurring within the sites. In addition to riparian wetland and fresh emergent wetland, this table includes "other waters of the United States" (e.g., riverine, pond, and intermittent creek features), which are also under the jurisdiction of the Corps. A field verification was conducted by the Corps, and a verification letter was issued to Reclamation on May 9, 2005. The administrative record documenting the verification process is included as Appendix C.

Wotland Type	Total Acreage				
wettand Type	Conner Creek	Valdor Gulch	Elkhorn	Pear Tree Gulch	
Wetlands			•		
Riparian wetland	11.22	13.79	3.37	2.08	
Fresh emergent wetland	1.18				
Total Wetlands	12.40	13.79	3.37	2.08	
Other Waters					
Riverine	15.56	29.84	18.18	10.10	
Intermittent creek		1.73		0.003	
Open-water pond	2.42				
Total Other Waters	17.98	31.57	18.18	10.10	
Total Jurisdictional Waters	30.38	45.36	21.55	12.18	

TABLE 3.7-4.

SUMMARY OF JURISDICTIONAL WATERS, CANYON CREEK SUITE OF REHABILITATION SITES

Five types of jurisdictional features were mapped in the project area: riverine (perennial stream), intermittent creek, open water pond, riparian wetland, and fresh emergent wetland (Figures 3a-d in Appendix C). These features, which are described below, occupy a total of 109.47 acres of the project area. In wet years, all overflow in the project area drains into the Trinity River.

<u>Riverine</u>. A portion of the Trinity River occurs within each of the four sites and is the primary factor influencing wetland features associated with the project area. Riverine habitat, identified as the river itself, exhibits a distinct bed and bank feature (i.e., scouring), as well as continuous inundation, watermarks, drift lines, and sediment deposits.

<u>Intermittent Creek.</u> Intermittent creek features include natural drainages that convey waters intermittently during the late fall, winter, and spring months, but are usually dry during the summer and early fall months. An unnamed intermittent creek was identified flowing north to south within the Pear Tree Gulch site (North State Resources 2004). The water is conveyed to the site via a culvert under SR 299. A second unnamed intermittent creek was documented at the Valdor Gulch site. This feature originates outside of the site boundaries, continuing in an easterly direction within the site (along the eastern boundary) and eventually draining to the Trinity River. Vegetation within both these intermittent creek channels is limited due to seasonal flooding and scouring.

<u>Open-Water Pond.</u> A man-made open-water pond feature is found at the Conner Creek site. This feature consists of a deep-water area that exhibits perennial inundation.

<u>Riparian Wetland.</u> Riparian wetlands are found at each of the four sites. Features determined to be riparian wetlands consist of areas associated with the Trinity River corridor. Riparian wetlands are characterized by a complex of open to dense emergent herbaceous and woody riparian vegetative growth. Plant species observed include torrent sedge (*Carex nudata*), tall flatsedge (*Cyperus eragrostis*), and reed canary grass (*Phalaris arundinaceae*).

<u>Fresh Emergent Wetland.</u> Fresh emergent wetlands are found at the Conner Creek site and are formed in three different ways: 1) from inundation of lands surrounding the open-water pond, 2) from depressions between tailings piles, and 3) from a depression within the Trinity River overflow area (i.e., ponding occurs at low point, allowing emergent vegetation to become established). Fresh emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes. The dominant plant species include narrow-leaf cattail (*Typha angustifolia*), Himalayan blackberry, perennial ryegrass (*Lolium perenne*), and narrow-leaved willow (*Salix exigua*).

3.7.2 REGULATORY SETTING

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies before construction of the proposed project.

Federal

U. S. Army Corps of Engineers

Section 404, Clean Water Act

The objective of the Clean Water Act (CWA 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Discharge of fill material into jurisdictional waters of the United States, including wetlands, is regulated by the Corps under Section 404 of the federal Clean Water Act (33 USC 1251-1376). Corps regulations implementing Section 404 define waters of the United States to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3). The placement of structures in "navigable waters of
the United States" is also regulated by the Corps under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are permitted under either individual or general (e.g., nationwide) permits. The specific applicability of the permit types is determined by the Corps on a case-by-case basis. Based on preliminary conversation with the Corps (San Francisco District – Eureka Field Office), the project is expected to be permitted under Nationwide Permit Number 27 (Wetland and Riparian Restoration and Creation Activities).

U.S. Fish and Wildlife Service

Federal Endangered Species Act

The ESA defines "take" (Section 9) and generally prohibits the "taking" of a species listed as endangered or threatened (16 USC. 1532, 50 CFR 17.3). Under the ESA, the "take" of a federally listed species is deemed to occur when an intentional or negligent act or omission causes the agent of the action "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" includes acts that actually kill or injure wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species. Three federally listed species may occur on the sites: American peregrine falcon, bald eagle, and northern spotted owl.

According to a habitat assessment of the project sites and within at least 0.25 mile of the site perimeter, performed in 2003, the Elkhorn and Pear Tree Gulch sites contain appropriate nesting, roosting, and foraging habitat for northern spotted owls. Consequently, the Redwood Science Lab conducted protocol northern spotted owl surveys within 0.5 miles of each Canyon Creek project site during spring 2004 (Miller and Herrera 2005). No owls were detected. Due to the lack of habitat-modifying activities and anticipated fall construction (outside of the nesting season), the Proposed Action will have no effect on the northern spotted owl. Consequently, there is no need for consultation with the USFWS endangered species section.

U.S. Fish and Wildlife Service

Migratory Bird Treaty Act (MBTA)

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Most of the birds found in the study area are protected under the MBTA. Thus, project construction has the potential to directly take nests, eggs, young, or individuals of protected species. Further, construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests, which would be a violation of the MBTA. Measures that may be instituted to help ensure compliance with the MBTA include the following: • Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for most birds in Trinity County extends from March through July.

If the nesting season cannot be avoided, the following measures should be instituted:

- A qualified biologist should conduct pre-construction surveys no more than 1 week prior to the initiation of construction in any given area to ensure that no nests of species protected by the MBTA would be disturbed during project implementation.
- If an active nest more than half completed is found, a construction-free buffer zone should be established around the nest. The size of the buffer zone should be determined by a qualified biologist in consultation with CDFG.

If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., bushes, trees, grass, buildings, and burrows) that will be removed by the project should be removed before the onset of the nesting season (March 15) to help preclude nesting. Pre-removal surveys are required for some species. Removal of vegetation or structures slated for removal by the project should be completed outside of the nesting season (i.e., between August 1 and February 28).

U.S. Forest Service

The National Forest Management Act (NFMA) requires the USFS to "provide for a diversity of plant and animal communities" [16 U.S.C. 1604(g)(3)(B)] as part of its multiple use mandate. The USFS must maintain "viable populations of existing native and desired non-native species in the planning area" (36 CFR 219.19). The Sensitive Species program is designed to meet this mandate and demonstrate the USFS commitment to maintaining biodiversity on National Forest System lands. The program is a proactive approach to conserving species to prevent a trend toward listing under the Endangered Species Act of 1973, and to ensure the continued existence of viable, well-distributed populations. A "Sensitive Species" is any species of plant or animal that has been recognized by the Regional Forester to need special management in order to prevent it from becoming Threatened or Endangered.

State

California Department of Fish and Game

California Endangered Species Act

Under the CESA, the CDFG is responsible for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). The CDFG also maintains a list of "candidate species," which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species. The CDFG also maintains lists of "species of special concern," which serve as species "watch lists."

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially

significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may affect a candidate species.

Project-related impacts to species listed as threatened or endangered under CESA would be considered significant. State-listed species are fully protected under the mandates of the CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code Section 2081. Authorization from the CDFG would be in the form of an Incidental Take Permit. Five state-listed species may occur on the sites: Trinity bristle snail, American peregrine falcon, bald eagle, northern spotted owl, and little willow flycatcher. Potential impacts to these species are addressed below under "Environmental Consequences/Impact and Mitigation Measures."

Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sections 1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered, as defined by CDFG. Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the project.

Birds of Prey

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird, except as otherwise provided by this code or any regulation adopted pursuant thereto.

"Fully Protected" Species

California statutes also accord "fully protected" status to a number of specifically identified birds, mammals, reptiles, amphibians, and fish. These species cannot be "taken," even with an incidental take permit (California Fish and Game Code, Sections 3505, 3511, 4700, 5050, and 5515). "Fully protected" species potentially occurring in the project area include the American peregrine falcon, golden eagle, wolverine, and ring-tailed cat.

California Regional Water Quality Control Board

Section 401 Water Quality Certification

The Regional Water Board is responsible for enforcing and protecting water resources in association with the proposed project. The Regional Water Board also regulates the discharge of wastes to surface waters through the National Pollutant Discharge Elimination System (NPDES) permit process. Waste Discharge Requirements are established in NPDES permits to protect beneficial uses.

The Regional Water Board requires that a project proponent apply for and obtain a CWA Section 401 Water Quality Certification for any project that requires a CWA Section 404 permit from the Corps. Since the Proposed Action and Alternative 1 would have the potential to affect water quality in the Trinity River, Reclamation will prepare and submit to the Regional Water Board an application for Section 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill). The application will be submitted to the Regional Water Board when the pre-construction notification is sent to the Corps. The Regional Water Board is likely to impose water quality limitations and project conditions through issuance of waste discharge requirements or Section 401 Certification.

In addition, a Notice of Intent (NOI) application to comply with the General Permit for Storm Water Discharges Associated with Construction Activities will be prepared and submitted by the contractor to the State Water Resources Control Board following award of the Project construction contract and completion of the NEPA/CEQA process.

Local

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies related to vegetation, wildlife, and wetland issues associated with the Proposed Action were taken from the applicable elements of the General Plan (Trinity County 2001). The General Plan includes the Junction City Community Plan (Trinity County 1987).

County Wide Goals and Objectives

<u>Environmental.</u> To strive to conserve those resources of the county that are important to its character and economic well-being:

- By assuring that developments occurring on these lands are compatible with the resources.
- By strongly supporting the county as "lead agency" or as an integral participant in any state or federal project within the county so that all agencies are made aware of local desires and all plans are coordinated.
- By utilizing a sound resource-related planning process in decision-making.
- By protecting not only rare and endangered species, but also required habitat for more plentiful species.

Junction City Community Plan Goals and Objectives

The Junction City Community Plan includes the area centered on the Trinity River from Maxwell Creek to slightly downstream of Helena.

Natural Resources

Goal: To preserve and maintain open space areas for a variety of wildlife uses.

- Protect floodplain areas from intensive development which could lead to adverse impacts on wildlife.
- Review future development to ensure protection of significant habitat areas (other than critical winter range).

- Achieve a balance between development and maintenance of open space for critical deer winter range.
- Preserve and protect special habitat areas, such as mineral springs for general wildlife usage, and snag areas along the Trinity River for Bald Eagles and other raptors.

Goal: Maintain, and enhance the high quality of the area's natural resources.

- Continue, and support, the County's policy prohibiting the use of herbicides or pesticides as a land management tool.
- Encourage rehabilitation efforts of old brush fields aimed at increasing deer winter forage opportunities throughout the Plan Area.
- Work with property owners adjacent to the Trinity River to retain existing riparian vegetation.

Goal: To encourage the continued use of resource lands for resource production purposes.

• Encourage the sound use of mineral resources, especially sand and gravel operations, which also reduce sedimentation of the Trinity River.

Project Consistency with the Trinity County General Plan and Community Plans

This section compares the goals and objectives of the proposed project to the relevant local planning polices (i.e., Trinity County General Plan, Junction City Community Plan) to determine if there are any inconsistencies.

The goals and objectives associated described in Chapter 1 are generally compatible with the applicable General Plan goals and policies summarized above. The overall goal of the Proposed Action is to rehabilitate the sites so that they function in a manner that is closer to historic conditions (e.g., pre-Lewiston Dam). Although there will be some mechanical vegetation removal along the Trinity River floodplain, which is a Scenic Conservation Overlay Zone, the proposed project will include both riparian and upland revegetation efforts intended to provide a more diverse plant assemblage than what is currently present, thereby enhancing the long-term aesthetic values of the river corridor.

3.7.3 Environmental Consequences/Impacts and Mitigation Measures

Significance Criteria

Significance criteria used to analyze the potential impacts of the project on vegetation, wildlife, and wetland resources include factual and scientific information and regulatory standards of county, state, and federal agencies, including the *CEQA Guidelines*. These criteria have been developed to establish thresholds to determine significance of impacts pursuant to CEQA (Section 15064.7) and should not be confused with a "take" or adverse effect under the ESA. Additionally, significance criteria do not apply for purposes of NEPA.

Impacts on vegetation would be significant if implementation of the project would result in any of the following:

- potential for reductions in the number, or restrictions of the range, of an endangered or threatened plant species or a plant species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- potential for substantial reductions in the habitat of any native plant species including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- potential for causing a native plant population to drop below self-sustaining levels;
- potential to eliminate a native plant community;
- substantial adverse effect, either directly or through habitat modifications, on any plant identified as a sensitive or special-status species in local or regional plans, policies, or regulations;
- substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- a conflict with any local policies or ordinances protecting vegetation resources;
- a conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of plant resources; or
- potential for spread of non-native and invasive plant species.

Impacts on wildlife would be significant if implementation of the project would result in any of the following:

- mortality of state or federally listed wildlife species, or species that are candidates for listing or proposed for listing;
- potential for reductions in the number, or restrictions of the range, of an endangered or threatened wildlife species or a wildlife species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- potential for substantial reductions in the habitat of any wildlife species, including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- potential for causing a wildlife population to drop below self-sustaining levels;
- substantially block or disrupt major terrestrial wildlife migration, or travel corridors;
- substantial adverse effect, either directly or through habitat modifications, on any wildlife species identified as a sensitive or special-status species in local or regional plans, policies, or regulations;
- substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- a conflict with any state or local policies or ordinances protecting wildlife resources; or

 a conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wildlife species.

Impacts on wetlands would be significant if they would result in any of the following:

- substantial adverse effect on any riparian habitat;
- substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to marsh, vernal pool, etc.) through direct removal, filling, hydrological interruption, or other means;
- a conflict with any local policies or ordinances protecting wetland and/or riparian resources; or
- a conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wetland resources.

Impacts and Mitigation Measures

Table 3.7-5 summarizes the potential vegetation, wildlife, and wetlands impacts that would result from the No-Action Alternative, the Proposed Action, and Alternative 1.

TABLE 3.7.5.

SUMMARY OF VEGETATION, WILDLIFE AND WETLAND IMPACTS FOR THE $\,$ NO-ACTION ALTERNATIVE, THE PROPOSED ACTION, AND ALTERNATIVE 1 $\,$

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
1. Construction activities associated with the project could result in the loss of jurisdictional waters (e.g., wetlands) and riparian habitat.	All sites	NI	S	S	LS	LS
 Implementation of the project would result in the loss of upland plant communities. 	All sites	NI	LS	LS	N/A ¹	N/A ¹
3. Construction of the project could result in the loss of individuals of a special-status plant species.	All sites	NI	S	S	LS	LS
4. Construction activities associated with the project could result in impacts to the federally listed Trinity bristle snail.	All sites	NI	S	S	LS	LS

TABLE 3.7.5.

SUMMARY OF VEGETATION, WILDLIFE AND WETLAND IMPACTS FOR THE NO-ACTION ALTERNATIVE, THE PROPOSED ACTION, AND ALTERNATIVE 1

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
5. Construction activities associated with the project could result in impacts to the federally listed northern spotted owl	All sites	NI	LS	LS	N/A ¹	N/A ¹
 Construction activities associated with the project could result in impacts to the state- listed little willow flycatcher. 	All sites	NI	S	S	LS	LS
 Construction activities associated with the project could result in impacts to foothill yellow-legged frogs. 	All sites	NI	S	S	LS	LS
8. Construction activities associated with the project could result in impacts to northwestern pond turtles.	All sites	NI	S	S	LS	LS
 Construction activities associated with the project could result in impacts to nesting yellow warblers and yellow-breasted chats. 	All sites	NI	S	S	LS	LS
10. Construction activities associated with the project could disrupt active special-status raptor nests.	All sites	NI	S	S	LS	LS
11. Construction activities associated with the project could result in impacts to special- status bats and the ring-tailed cat.	All sites	NI	S	S	LS	LS

3. Affected Environment and Environmental Consequences

3.7 Vegetation, Wildlife and Wetlands

TABLE 3.7.5.

SUMMARY OF VEGETATION, WILDLIFE AND WETLAND IMPACTS FOR THE NO-ACTION ALTERNATIVE, THE PROPOSED ACTION, AND ALTERNATIVE 1

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Proposed Action with Mitigation	Alternative 1 with Mitigation
12. Construction activities associated with the project could result in the loss of non-breeding habitat for several special-status birds.	All sites	NI	LS	LS	N/A ¹	N/A ¹
13. Construction activities associated with the project could result in impacts to BLM sensitive species.	All sites	NI	S	S	LS	LS
14. Construction activities associated with the project could restrict terrestrial wildlife movement through the project area.	All sites	NI	LS	LS	N/A ¹	N/A ¹
 Implementation of the project could result in the spread of non-native and invasive plant species. 	All sites	NI	S	S	LS	LS

Notes:

LS = Less than SignificantS = SignificantSU = Significant UnavoidableNI = No ImpactB = BeneficialN/A = Not Applicable¹Because this potential impact is less than significant, no mitigation is required.

Impact 3.7-1: Construction activities associated with the project could result in the loss of jurisdictional wetlands and riparian habitat. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no loss of jurisdictional wetlands would occur because the project would not be constructed.

Proposed Action

Construction activities associated with the Proposed Action would result in both permanent and temporary impacts to jurisdictional waters (e.g., wetland features) within the sites. Table 3.7-6 lists impacts to these wetland features for the Proposed Action and Alternative 1. Construction of the Proposed Action would result in a direct impact to 6.24 acres of riparian wetland and 7.97 acres of riverine habitat. Direct impacts to jurisdictional wetlands would be considered significant.

TABLE 3.7-6.

EXPECTED AREA OF DISTURBANCE TO JURISDICTIONAL WATERS

lurisdictional Water Type	Approximate Area of Disturbance (Acres)			
Julisaictional water Type	Proposed Action	Alternative 1		
Conner Creek				
Riparian wetland	1.50	1.29		
Riverine	2.12	1.34		
Fresh emergent wetland				
Open-water pond				
Total	3.62	2.63		
VALDOR GULCH				
Riparian wetland	4.12	4.12		
Riverine	3.54	3.54		
Intermittent creek				
Total	7.66	7.66		
ELKHORN				
Riparian wetland	0.56	0.53		
Riverine	1.52	1.29		
Total	2.08	1.82		
PEAR TREE GULCH				
Riparian wetland	0.06	0.06		
Riverine	0.79	0.79		
Intermittent creek				
Total	0.85	0.85		
Total Riparian Wetland	6.24	6.00		
Total Riverine	7.97	6.96		

Alternative 1

Construction activities associated with Alternative 1 would result in both permanent and temporary impacts to jurisdictional wetland features. Project construction associated with Alternative 1 would result in the permanent loss of 5.99 acres of riparian wetland and 6.96 acres of riverine habitat, slightly less than the permanent impacts for the Proposed Action. Construction access routes and

staging areas would also temporarily disturb 0.01 acre of riparian wetland habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant impacts.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and minimize impacts to jurisdictional wetlands, the following measures will be implemented:

- **1a:** Prior to the start of construction activities, Reclamation shall retain a qualified biologist to identify potential construction access routes necessary for the project to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, jurisdictional waters shall be clearly identified in the construction drawings along with specific instructions to avoid any construction activity within these features. Each jurisdictional feature proposed to be avoided will be flagged, staked, or otherwise marked to ensure that construction activities do not encroach upon them. Marked areas shall be inspected and maintained on a regular basis throughout the construction phase.
- **1b:** Reclamation or its contractor will revegetate riparian areas with a substantial diversity of native plant revegetation areas. Planted areas will grow in over time and will provide increased diversity in riparian structure and species over that which presently exists. Because the present Trinity River channel is encroached (up to 300%) with riparian vegetation that is homogenous in nature, strict replacement requirements based on original stem counts and species are not desirable.
- **1c:** Floodplain values and functions will be enhanced by the Canyon Creek Rehabilitation Sites project. Consequently, substantial new areas beyond those identified in pre-project plant community delineations are expected to recruit to riparian (wetland) habitats, of both seasonal and perennial nature, within a 3-5 year post-project window.

Significance after Mitigation: Less than Significant

Impact 3.7-2: Implementation of the project would result in the loss of upland plant communities. *No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to upland plant communities would occur because the project would not be constructed.

Proposed Action

Table 3.7-7 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of the Proposed Action. The permanent loss of 38.05 acres and a temporary impact to 3.25 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types within the sites and local area. Furthermore, a proportion of the permanently lost montane riparian habitat communities would be replaced with an early and diverse stage of riparian community that is relatively rare along the river. A combination of replanting and natural revegetation will occur to ensure that riparian habitat values on the Trinity meet wildlife needs. Current needs for revegetation will be determined via monitoring, coordination with local resource agencies, and adaptively managing to meet changing needs and desired future conditions. Temporary access routes and staging areas will be restored to their original condition upon completion of work. Additionally, any affected upland areas will be re-vegetated with native plant species.

Alternative 1

Alternative 1 would result in impacts to upland habitats similar to those of the Proposed Action, although fewer acres would be affected. Table 3.7-7 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of Alternative 1. The permanent loss of 28.91 acres and a temporary impact to 2.98 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types within the site. Furthermore, a proportion of the permanently lost montane riparian habitat communities would be replaced with an early and diverse stage of riparian community that is relatively rare along the river. A combination of replanting and natural revegetation will occur to ensure that riparian habitat values on the Trinity meet wildlife needs. Current needs for revegetation will be determined via monitoring, coordination with local resource agencies, and adaptively managing to meet changing needs and desired future conditions. Temporary access routes and staging areas will be restored to their original condition upon completion of work. Additionally, any affected upland areas will be re-vegetated with native plant species.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

TABLE 3.7-7.
EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES

	Approximate Area of Disturbance (Acres)					
Upland Plant Community Type	Propos	ed Action	Alternative 1			
1360	Temporary	Permanent	Temporary	Permanent		
Conner Creek						
Annual grassland	0.35	0.56	0.35	0.55		
Barren	0.00	1.67	0.00	1.58		
Foothill pine	0.00	0.02	0.00	0.02		
Mixed chaparral	0.00	0.00	0.00	0.00		
Montane hardwood-conifer	0.00	0.00	0.00	0.00		
Montane riparian	0.28	5.52	0.28	4.62		
Perennial grassland	0.35	0.85	0.35	0.85		
Ponderosa pine	0.01	0.00	0.01	0.00		
Total	0.99	8.62	0.99	7.62		
Valdor Gulch						
Annual grassland	0.00	0.09	0.00	0.09		
Barren	0.00	2.48	0.00	2.48		
Foothill pine	0.00	0.25	0.00	0.25		
Klamath mixed conifer	0.00	0.00	0.00	0.00		
Montane hardwood	0.00	0.00	0.00	0.00		
Montane hardwood-conifer	0.00	0.00	0.00	0.00		
Montane riparian	0.38	9.94	0.38	9.94		
Perennial grassland	0.53	4.33	0.53	4.33		
Urban	0.00	0.00	0.00	0.00		
Total	0.91	17.09	0.91	17.09		
Elkhorn						
Annual grassland	0.00	0.01	0.35	0.35		
Barren	0.00	0.89	0.00	0.00		
Klamath mixed conifer	0.01	0.26	0.01	0.01		
Mixed chaparral	0.00	0.00	0.00	0.00		
Montane hardwood	0.00	0.00	0.00	0.00		
Montane hardwood-conifer	0.00	0.17	0.00	0.13		
Montane riparian	0.20	2.77	0.49	0.14		
Perennial grassland	1.14	4.90	0.23	0.23		

	Approximate Area of Disturbance (Acres)				
Upland Plant Community Type	Propos	ed Action	Alternative 1		
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Temporary	Permanent	Temporary	Permanent	
Urban	0.00	0.00	0.00	0.00	
Total	1.35	9.00	1.08	0.86	
Pear Tree Gulch					
Annual grassland	0.00	0.61	0.00	0.61	
Barren	0.00	0.48	0.00	0.48	
Foothill pine	0.00	0.00	0.00	0.00	
Klamath mixed conifer	0.00	0.00	0.00	0.00	
Mixed chaparral	0.00	0.24	0.00	0.24	
Montane hardwood	0.00	0.00	0.00	0.00	
Montane riparian	0.00	2.01	0.00	2.01	
Total	0.00	3.34	0.00	3.34	
TOTAL AT ALL SITES	3.25	38.05	2.98	28.91	
TOTAL MONTANE RIPARIAN	0.86	20.24	1.15	16.71	

TABLE 3.7-7. EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES

Impact 3.7-3: Construction of the project could result in the loss of individuals of a special-status plant species. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to a special-status plant species would occur because the project would not be constructed.

Proposed Action and Alternative 1

Floristic (vegetation) inventories and special-status plant surveys were conducted over the entirety of the Elkhorn and Pear Tree Gulch sites and the majority of the Conner Creek and Valdor Gulch sites. No special-status plant species were detected at any of the sites. A habitat analysis of those portions of the Conner Creek and Valdor Gulch sites that were not surveyed indicates that, due to a lack of suitable habitat, no federally listed plant species are likely to occur. However, there is a low probability that two special-status plant species—Canyon Creek stonecrop and Heckner's lewisia, both CNPS List 1B—may occur in these areas.

Mitigation Measures – Elkhorn and Pear Tree Gulch Sites

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Mitigation Measures – Canyon Creek and Valdor Gulch Sites

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Proposed Action and Alternative 1

The following measures shall be implemented at the Conner Creek and Valdor Gulch sites to avoid or minimize project-related impacts to Canyon Creek stonecrop and Hecner's lewisia:

- **3a:** A qualified botanist will visit the unsurveyed portions of the Conner Creek and Valdor Gulch sites to determine habitat suitability at those locations for Canyon Creek stonecrop and/or Heckner's lewisia. If suitable habitat is determined to be available, surveys shall be conducted during the blooming periods for these species (i.e., May–July) to determine (1) if the species occur and (2) the quality, location, and extent of any populations. If either of these species is found within 250 feet of any proposed disturbance, the following measures shall be implemented.
- **3b:** Prior to the start of disturbance, exclusionary fencing shall be erected around the known occurrences. If necessary, a qualified botanist should be present to assist with locating these special-status plant populations. The exclusionary fencing shall be periodically inspected throughout each period of construction and be repaired as necessary.
- **3c:** If a population cannot be fully avoided, the applicant shall retain a qualified botanist to contact CDFG to determine the appropriate salvage and relocation measures.

Significance after Mitigation: Less than Significant.

Impact 3.7-4: Construction activities associated with the project could result in impacts to the federally listed Trinity bristle snail. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to the Trinity bristle snail would occur.

Proposed Action

The sites provide limited suitable habitat for the Trinity bristle snail. However, the species was not detected during surveys in 2002. Therefore, construction activities associated with the Proposed Action have only a small potential to affect Trinity bristle snails, either directly or indirectly. Potential direct effects would include mortality of individuals due to equipment and vehicle traffic and the loss of riparian vegetation cover. Potential indirect effects would include degradation of

riparian habitat due to accidental spills and/or sedimentation. Construction activities associated with the Proposed Action in suitable bristle snail habitat could potentially result in significant impacts to the Trinity bristle snail, and mitigation is required.

Alternative 1

Construction-related impacts to the Trinity bristle snail associated with Alternative 1 would be similar to but less than the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to the Trinity bristle snail, the following measures shall be implemented:

- **4a:** If identified potential bristle snail habitat is to be disturbed during construction, a minimum of one survey for Trinity bristle snails in this area(s) shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by Reclamation to conduct the survey. If a Trinity bristle snail is detected, the biologist shall relocate it to a suitable location outside of the construction limits.
- **4b:** Mitigation measures presented in Section 3.5 for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to riparian habitat due to sedimentation and accidental spills.
- **4c:** Mitigation Measure 3.7-1 (discussed previously) concerning disturbance to riparian habitat will be fully implemented.

Significance after Mitigation: N/A.

Impact 3.7-5: Construction activities associated with the project could result in impacts to the federally listed northern spotted owl. *No Impact for the No-Action Alternative, Proposed Action, and Alternative 1.*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to the northern spotted owl would occur because the project would not be constructed.

Proposed Action

Suitable nesting, roosting, and foraging habitat for northern spotted owls is not located within or immediately adjacent to the Conner Creek and Valdor Gulch sites but does occur within or immediately adjacent to the Elkhorn and Pear Tree Gulch sites. However, no suitable habitat occurs within the proposed areas of disturbance. As previously discussed, there are no known occurrences of the northern spotted owl within 5 miles of the proposed project. The Redwood Sciences Laboratory conducted protocol northern spotted owl surveys within 0.5 miles of each Canyon Creek project site

during spring 2004 (Miller and Herrera 2005). No owls were detected. Due to the lack of habitatmodifying activities and anticipated fall construction (outside of the nesting season), the Proposed Action is not likely to affect the northern spotted owl.

Alternative 1

Construction-related impacts to northern spotted owl associated with Alternative 1 would be similar to those under the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.7-6: Construction activities associated with the project could result in impacts to the statelisted little willow flycatcher. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to the little willow flycatcher would occur because the project would not be constructed.

Proposed Action

Suitable montane riparian habitat for the little willow flycatcher is present at all four sites, and willow flycatchers were detected at the Valdor Gulch site during a 2003 survey (Miller, Ralph, and Herrera 2003). However, nests were not detected, and breeding activity has not been confirmed. It is currently believed that the observed birds were migrants (Miller, Ralph, and Herrera 2003). Though no nesting individuals have been observed in or near the project area, there is the potential for new nesting territories to become established within the sites in subsequent nesting seasons, prior to the start of construction.

The Proposed Action would result in a small, temporary reduction of foraging habitat for this species. However, implementation of Mitigation Measure 3.7-1 will ensure that there is no net loss of riparian habitat and a long-term increase in riparian habitat diversity. Thus, due to the small and temporary nature of the impacts and the regional abundance of similar habitats, the project is not expected to have a significant impact on habitat for the little willow flycatcher. However, the removal of riparian vegetation and the noise associated with construction activities could disturb individuals nesting on or adjacent to the sites. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting little willow flycatchers or any activities resulting in nest abandonment would be considered a significant impact.

Alternative 1

Construction-related impacts to little willow flycatcher associated with Alternative 1 would be less than under the Proposed Action because less riparian habitat would be affected. Nonetheless, the impacts under Alternative 1 would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

The following mitigation measures shall be implemented to avoid or minimize potential impacts to the little willow flycatcher:

- **6a:** Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 15 through July 31 (P. Herrera, Redwood Sciences Laboratory pers. comm..). If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, mitigations 6b and 6c should be implemented.
- **6b:** A qualified biologist should conduct a minimum of one pre-construction survey for the little willow flycatcher within the project sites and a 250-foot buffer around the sites. The survey should be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey should be used to ensure that no nests of this species within or immediately adjacent to the project sites would be disturbed during project implementation. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.
- **6c:** If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

Significance after Mitigation: Less than Significant.

Impact 3.7-7: Construction activities associated with the project could result in impacts to the foothill yellow-legged frog. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to the foothill yellow-legged frog would occur.

Proposed Action

All four sites provide suitable habitat for the foothill yellow-legged frog, and this species was observed at all the sites during herpetofauna surveys conducted in 2003 (Welsh, Ashton, and Bettaso

2003). Evidence of reproduction (egg masses) was also found at three sites. Construction activities associated with the Proposed Action may affect foothill yellow-legged frogs directly and indirectly. Potential direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. These impacts may be considered significant. However, over the long term, the Proposed Action will benefit the species through the creation of additional and higher quality habitat, such as feathered edges and backwaters that will provide habitat for tadpoles.

Alternative 1

Impacts to foothill yellow-legged frog under Alternative 1 would be similar in type to those under the Proposed Action, but in the short-term would adversely affect a smaller amount of foothill yellow-legged frog habitat while in the long-term creating slightly less new/improved habitat.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to the foothill yellow-legged frog, the following measures shall be implemented:

- **7a:** If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for yellow-legged frog larvae and/or eggs shall be conducted by a qualified biologist. This survey would need to be conducted within the construction boundaries no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist shall relocate them to a suitable location outside of the construction boundaries.
- **7b:** In the event that a yellow-legged frog is observed within the construction boundaries, the contractor shall temporarily halt in-stream construction activities until the frog has been moved to a safe location with suitable habitat outside of the construction limits.
- 7c: Mitigation measures presented in Section 3.5 for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the yellow-legged frog due to sedimentation and accidental spills.
- 7d: Mitigation measures associated with the disturbance to riparian habitat were previously discussed (Mitigation Measure 3.7-1) and will be fully implemented.

Significance after Mitigation: Less than Significant

Impact 3.7-8: Construction activities associated with the project could result in impacts to the northwestern pond turtle. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to the northwestern pond turtle would occur because the project would not be constructed.

Proposed Action

All four sites provide suitable habitat for the northwestern pond turtle, and this species was observed during the 2003 herpetofauna surveys in, or near, the Conner Creek, Valdor Gulch, and Pear Tree Gulch sites (Welsh, Ashton, and Bettaso 2003). Construction activities associated with the Proposed Action could affect pond turtles directly and indirectly. Potential direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Thus, construction activities associated with the Proposed Action may result in significant impacts to the northwestern pond turtle and mitigation is required. However, over the long term, the Proposed Action will benefit the species through the creation of additional and higher quality habitat. For example, removal of riparian berms will improve access to potential upland nesting and overwintering sites, and the creation of side channels will provide slow-water basking and foraging habitat.

Alternative 1

Construction-related impacts to the northwestern pond turtle associated with Alternative 1 would be similar to those under the Proposed Action. However, in the short term, Alternative 1 would adversely affect a smaller amount of northwestern pond turtle habitat, and in the long term, it would create slightly less new/improved habitat.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to the northwestern pond turtle, the following measures shall be implemented:

- **8a:** A minimum of one survey for pond turtle nests shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by Reclamation to conduct the survey. If a pond turtle nest is found, the biologist shall flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, the nest should be excavated by the biologist and reburied at a suitable location outside of the construction limits.
- **8b:** In the event that a pond turtle is observed within the construction limits, the contractor shall temporarily halt construction activities until the turtle has been moved by a qualified biologist to a safe location within suitable habitat outside of the construction limits.

- **8c:** Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.
- **8d:** Mitigation measures associated with the disturbance to riparian habitat were discussed previously in this section (Mitigation Measure 3.7-1) and will be fully implemented.

Significance after Mitigation: Less than Significant

Impact 3.7-9: Construction activities associated with the project could result in impacts to nesting California yellow warblers and yellow-breasted chats. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to nesting yellow warblers and yellow-breasted chats would occur.

Proposed Action

The riparian habitat associated with the Trinity River corridor at all four sites provides suitable nesting and foraging habitat for the California yellow warbler and yellow-breasted chat. Both of these species are designated as Species of Special Concern by the CDFG. Even though no recorded nest sites for the yellow warbler or yellow-breasted chat were identified by the CDFG (2005) in the general vicinity of the Proposed Action and no nests were observed during surveys conducted in 2003, there is the potential for the two species to nest at the sites. Both species were observed at the Conner Creek, Valdor Gulch, Elkhorn, and Pear Tree Gulch sites during point count surveys in 2003 (Miller, Ralph, and Herrera 2003).

The Proposed Action would result in a small, temporary reduction of foraging and/or roosting habitat for these species. However, implementation of Mitigation Measure 3.7-3 will ensure that there is no net loss of riparian habitat. Furthermore, the Proposed Action would result in a long-term increase in riparian habitat diversity, increasing the quality of the habitat for these species. Thus, due to the small and temporary nature of the impacts and the regional abundance of similar habitats, the project is not expected to have a significant impact on habitat for the California yellow warbler and yellow-breasted chat. However, the removal of riparian vegetation and the noise associated with construction activities could disturb individuals nesting on or adjacent to the sites. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting California yellow warblers or yellow-breasted chats or any activities resulting in nest abandonment may be considered a significant impact to the species.

Alternative 1

Construction-related impacts to yellow warblers and yellow-breasted chats associated with Alternative 1 would be similar to those under the Proposed Action but would affect a smaller amount of riparian habitat.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to nesting California yellow warblers and yellow-breasted chats, the following measures shall be implemented:

- **9a:** Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for these species in Trinity County extends from March through August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, measures 9b and 9c should be implemented.
- **9b:** A qualified biologist should conduct a minimum of one pre-construction survey for yellow warblers and yellow-breasted chats within the project sites and a 250-foot buffer around the sites. The survey should be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey should be used to ensure that no nests of these species within or immediately adjacent to the project sites would be disturbed during project implementation. If an active nest is found, a qualified biologist should determine the extent of a construction-free buffer zone to be established around the nest.
- **9c:** If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

Significance after Mitigation: Less than Significant.

Impact 3.7-10: Construction activities associated with the project could disrupt nesting by specialstatus raptors. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to active raptor nests would occur because the project would not be constructed.

Proposed Action

Suitable nesting habitat for the northern goshawk, osprey, Cooper's hawk, and sharp-shinned hawk, which are designated as California Species of Special Concern, occurs at all four sites. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting raptors, or any activities resulting in raptor nest abandonment, may be considered a significant impact.

Alternative 1

Construction-related impacts to active raptor nests associated with Alternative 1 would be less than or similar to those under the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to nesting special-status raptors, the following measures shall be implemented:

- **10a:** Construction should be scheduled to avoid the nesting season to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season would be avoided and no impacts to nesting raptors would be expected. If it is not possible to schedule construction during this time, the following mitigation measures should be implemented.
- **10b:** Pre-construction surveys for nesting raptors should be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys should be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist should inspect all trees immediately adjacent to the impact areas for raptor nests. If an active raptor nest is found close enough (i.e., within 500 feet) to the construction area to be disturbed by these activities, the biologist, in consultation with the CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.
- **10c:** If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

Significance after Mitigation: Less than Significant.

Impact 3.7-11: Construction activities associated with the project could result in impacts to specialstatus bats and the ring-tailed cat. *No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1.*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to breeding special-status bats or the ring-tailed cat would occur.

Proposed Action

The Trinity River riparian corridor, including the sites for the Proposed Action, provides suitable roosting and/or foraging habitat for four bat species: the long-eared myotis, pallid bat, Yuma myotis,

and Townsend's western big-eared bat. Species-specific surveys for bats were not conducted at the sites; therefore, their presence is assumed. Two of these bat species (long-eared myotis bat and pallid bat) may roost in trees (e.g., spaces under tree bark or in cavities) as well as caves and buildings, while the other two species (Townsend's western big-eared bat and Yuma myotis) prefer to nest in structures such as buildings, caves, and mines. The project area does not provide suitable roosting habitat for the Townsend's western big-eared bat or the Yuma myotis. For the long-eared myotis and pallid bat (species that roost in trees), habitat preference is typically woodland and forest habitat. It is unlikely that these bats would roost in the willows and alders typically found immediately along the Trinity River. However, they may roost in habitats more likely to contain large trees with cavities or loose bark, such as montane hardwood and foothill pine. Impacts to habitat containing potential roost trees will occur at all four sites. Noise and visual disturbances associated with construction activities may disrupt bats roosting within and directly adjacent to the project area. Further, removing large trees with cavities could result in the direct loss of colonies and may be considered a significant impact.

Each of these bat species has the potential to forage at the four project sites. Foraging habitat typically consists of forested habitats in close association with water. Construction activities associated with the Proposed Action could temporarily alter the foraging patterns of these species; however, this would be considered a less-than-significant impact based on the abundance of suitable foraging habitat in the vicinity of the Proposed Action. No long-term impediments to foraging habitat associated with the Proposed Action are anticipated.

The Trinity River riparian corridor also provides habitat for the ring-tailed cat. The willows and alders typically found immediately along the river are unlikely to provide suitable denning habitat for this species due to their small size and lack of large cavities/snags. However, other habitats in the project area, such as montane hardwood and montane hardwood conifer, may provide suitable denning sites. Thus, removal of large trees with cavities or snags could result in the loss of ring-tailed cats, which may be considered a significant impact. Construction activities would also result in short-term reduction in foraging habitat for this species. However, the project would ultimately result in an increase in habitat and an increase in habitat quality for this species. Thus, due to the abundance of similar habitat in the area, the temporary loss of foraging habitat would be a less-than-significant impact.

Alternative 1

Construction-related impacts to bats and bat habitat and to the ring-tailed cat associated with Alternative 1 would be similar to or less than those under the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize impacts to roosting special-status bats and the ring-tailed cat, the following measures shall be implemented:

- 11a: A pre-construction survey for roosting bats and ring-tailed cats shall be conducted prior to any removal of trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active roosts of special-status bats or dens of ring-tailed cats shall proceed prior to completion of the surveys. If no active roosts or dens are found, no further action would be warranted. Because bats are known to abandon young when disturbed, if a maternity roost is located, a qualified bat biologist will determine the extent of a construction-free zone to be implemented around the roost. If a bat maternity roost or hibernacula or a ring-tailed cat den is present, Measures 11b or 11c shall be implemented. CDFG shall also be notified of any active bat nurseries within the disturbance zones.
- 11b: If an active maternity roost or hibernacula is found, the project will be redesigned to avoid the loss of the tree occupied by the roost, if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence before bat maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zones described above should be observed during the bat maternity roost season (March 1–July 31). If a non-breeding bat hibernacula is found in a tree scheduled to be razed, the individuals shall be safely evicted, under the direction of a qualified bat biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow air flow through the cavity. Demolition shall then follow no less than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.
- **11c:** If an active ring-tailed cat nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be razed, the individuals shall be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow ring-tailed cats to escape during the darker hours.

Significance after Mitigation: Less than Significant

Impact 3.7-12: Construction activities associated with the project could result in the loss of nonbreeding habitat for special-status birds. *No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1.*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to non-breeding habitat for sensitive species would occur because the project would not be constructed.

Proposed Action

The Trinity River riparian corridor, including the sites for the Proposed Action, provides both foraging and perching habitat for bald eagles, golden eagles, American peregrine falcons, and osprey. The sites do not provide appropriate nesting habitat for these species; however, adjacent and/or nearby mixed-conifer habitat and montane hardwood-conifer habitat provide suitable nesting habitat for three of these species. Cliffs and ledges appropriate for nesting by the American peregrine falcon are not present at or near the sites. The nearest known bald eagle nesting site is located approximately 20 miles upstream on Lewiston Lake. No known golden eagle or osprey nests occur at the sites. Tree snags suitable for perching are located along the Trinity River. Construction activities associated with the Proposed Action could temporarily alter the foraging patterns of these species; however, this impact would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the proposed project. No long-term impediments to foraging habitat associated with the Proposed Action are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of the Trinity River for foraging habitat.

Alternative 1

Construction-related impacts to bald eagle, golden eagle, American peregrine falcon, and osprey nesting, foraging and perching habitat associated with Alternative 1 would be similar to or less than under the Proposed Action.

Mitigation

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-13: Construction activities associated with the project could result in impacts to BLM sensitive species. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1, except for the Pacific fisher, and Less-than-Significant Impact for the Proposed Action and Alternative 1 for the Pacific fisher.*

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts to BLM sensitive species would occur.

Proposed Action

As previously discussed, plant surveys for BLM sensitive and Survey and Manage species were conducted at the four sites during the spring and summer of 2002 and fall 2003 (McFarland 2003). Neither of the two BLM sensitive plant species with potential to occur at the sites were identified during the focused plant surveys. Additionally, pre-disturbance surveys for mollusks were conducted within the sites during the spring 2001 and fall 2002 survey periods. No mollusks were located during either visit. None of the public lands at the four sites contains suitable habitat for BLM sensitive mollusks.

Seven of the wildlife species with potential to occur at the four sites are designated BLM sensitive species: foothill yellow-legged frog, Pacific fisher, small-footed myotis bat, long-eared myotis bat, pallid bat, Townsend's western big-eared bat, and Yuma myotis bat (see Table 3.7-1). With the exception of the Pacific fisher, potential impacts to these species are discussed as separate impacts above. The Pacific fisher may use the Trinity River as a travel corridor; however, suitable denning habitat is not present at the sites. Therefore, impacts would be less than significant and mitigation measures are not provided for the Pacific fisher.

Alternative 1

Construction-related impacts to BLM sensitive species under Alternative 1 would be similar to those under the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impacts for the Pacific fisher were identified, no mitigation is required. Mitigation measures 3a, 3b and 3c will reduce the impacts to special-status plant species to a less-than-significant level. Mitigation measures 7a, 7b, and 7c will reduce the impacts to the foothill yellow-legged frog to a less-than-significant level. Mitigation measures 11a and 11b will reduce the impacts to special-status bat species to a less-than-significant level.

Significance after Mitigation: N/A.

Impact 3.7-14 Construction activities associated with the project could restrict terrestrial wildlife movement through the sites. *No Impact for the No-Action Alternative; Less-than-Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, construction-related restriction of terrestrial wildlife movement through the sites would not occur because the project would not be constructed.

Proposed Action

The Trinity River corridor provides habitat and travel corridors for such species as Pacific fisher, American marten, black-tailed deer, river otter, beaver, common merganser (*Mergus merganser*), green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), wood duck (*Aix sponsa*), belted kingfisher, cliff swallow (*Hirundo pyrrhonota*), bank swallow, and raccoon. The riparian vegetation along the Trinity River, in association with adjacent and/or nearby mixed-conifer and montane hardwood-conifer habitat, provides connected habitat within an area that has been fragmented by rural residential development and road building. Black-tailed deer inhabit shrublands, forests, and oak woodlands and use riparian vegetation for cover. Construction noise could temporarily alter foraging patterns of resident wildlife species, and vegetation removal along the river could temporarily disrupt wildlife movement through the area. However, no long-term impediments to wildlife movement within the sites are anticipated as a result of implementing the Proposed Action. Therefore, this would be a less-than-significant impact.

Alternative 1

Construction-related impacts to terrestrial wildlife movement associated with Alternative 1 would be similar to or less than those under the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-15: Implementation of the project could result in the spread of non-native and invasive plant species. *No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1*

No-Action Alternative

Under the No-Action Alternative, the spread of non-native and invasive plant species would not occur as a result of construction activities because the project would not be constructed.

Proposed Action

Implementation of the proposed project could result in the spread of non-native and invasive plant species (e.g., dalmatian toadflax, tree of heaven, yellow star-thistle, Bermuda grass, and Klamathweed) during ground-disturbing activities. This would be considered a significant impact. However, further spread of weeds is not anticipated with implementation of the mitigation measures described below.

Alternative 1

The spread of non-native and invasive plant species as a result of implementation of Alternative 1 would be similar to or less than under the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified for this alternative, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

In order to avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures shall be implemented:

- **15a:** Use only certified weed-free erosion control materials, mulch, and seed.
- **15b:** Preclude the use of rice straw in riparian areas.
- **15c:** Limit any import or export of fill to material not known to be weed free.
- **15d:** Require the construction contractor to thoroughly wash all equipment at a commercial wash facility prior to entering the County.

15e: Within the first 3 to 5 years post-project, if it is determined that non-native invasive vegetation is out-competing desired planted or native colonizing riparian vegetation, opportunities to control these non-native species may be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species. Control methods will be consistent with those adopted by the Trinity County Weed Management Cooperative.

Significance after Mitigation: Less than Significant