# Trinity River Channel Rehabilitation Sites: Lower Steiner Flat (River Mile 90.2-91.3) and Upper Junction City (River Mile 79.8-80.4)

**Final Environmental Assessment/Initial Study**

**To tier to:**

***The Trinity River Mainstem Fishery Restoration Environmental Impact Statement***

**And**

***Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites Master Environmental Impact Report***
**(State Clearinghouse # 2008032110)**

**May 2012**

**California Lead Agency for CEQA**
North Coast Regional Water Quality Control Board

**Project Proponent and Federal Lead Agency for NEPA**
Trinity River Restoration Program
U. S. Department of the Interior
Bureau of Reclamation

**Federal Co-lead Agency for NEPA**
U. S. Department of Interior, Bureau of Land Management

**Project Proponent's Consultant**
North Wind Services, LLC

*page left intentionally blank*

# Contents

# Figures

# Tables

# Acronyms and Abbreviations

| | |
|---|---|
| AEAM | Adaptive Environmental Assessment and Management |
| afa | acre feet annually |
| APE | Area of Potential Effect |
| Basin Plan | Water Quality Control Plan for the North Coast Region |
| BFE | base flood elevation |
| BLM | U.S. Bureau of Land Management |
| BMP | best management practice |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| Caltrans | California Department of Transportation |
| CARB | California Air Resources Board |
| CCAA | California Clean Air Act |
| CCR | California Code of Regulations |
| CDFG | California Department of Fish and Game |
| CEQ | President's Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CHP | California Highway Patrol |
| CNDDB | California Natural Diversity Database |
| CRHR | California Register of Historic Resources |
| CVP | Central Valley Project |
| CVPIA | Central Valley Project Improvement Act |
| CWA | Clean Water Act |
| dB | logarithmic decibel |
| dBA | "A-weighted" decibel scale |
| DWR | Department of Water Resources |
| EA | Environmental Assessment |
| EFH | Essential Fish Habitat |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| ELJ | Engineered Log Jam |
| EPA | Environmental Protection Agency |
| ESL | Environmental Site Limit |
| ESU | Evolutionarily Significant Unit |
| FACW | Facultative Wetland Plants |
| FAC | Facultative Plants |
| FACU | Facultative Upland Plants |
| FEIS | Final Environmental Impact Statement |

| | |
|---|---|
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Maps |
| fps | feet per second |
| GHG | greenhouse gas |
| GIS | geographic information system |
| HAP | Hazardous Air Pollutant |
| HEC-RAS | Hydraulic Engineering Center River Analysis System |
| HVT | Hoopa Valley Tribe |
| IAP | Integrated Assessment Plan |
| IBLA | Interior Board of Land Appeals |
| IS | Initial Study |
| KMP | Klamath Mountains Province |
| KOP | key observation point |
| $L_{dn}$ | day-night average sound level |
| LRMP | Land and Resource Management Plan |
| LSF | Lower Steiner Flat |
| LWD | large woody debris |
| MoA | Memorandum of Agreement |
| MBTA | Migratory Bird Treaty Act |
| MDB&M | Mount Diablo Base and Meridian |
| MFF | maximum fishery flows |
| MMRP | Mitigation Monitoring and Reporting Program |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| msl | mean sea level |
| NAAQS | National Ambient Air Quality Standards |
| NAHC | Native American Heritage Commission |
| NCAB | North Coast Air Basin |
| NCUAQMD | North Coast Unified Air Quality Management District |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| NI | No Indicator |
| NMFS | National Marine Fisheries Service |
| NOP | Notice of Preparation |
| NRHP | National Register of Historic Places |
| NTU | nephelometric turbidity unit |
| OBL | Obligate Wetland Plants |
| OHWM | ordinary high water mark |
| PA | Programmatic Agreement |
| $PM_{2.5}$ | particulate matter less than 2.5 microns in aerodynamic diameter |
| $PM_{10}$ | particulate matter less than 10 microns in aerodynamic diameter |
| PRC | Public Resources Code |
| Proposed Project | Lower Steiner Flat and Upper Junction City Rehabilitation Sites |

| | |
|---|---|
| Q | flow rate (typically expressed in cfs) |
| $Q_s$ | summer base flow |
| $Q_{1.5}$ | 1.5-year return interval design flow |
| $Q_{100}$ | 100-year flood flow |
| Reclamation | U.S. Bureau of Reclamation |
| Regional Water Board | North Coast Regional Water Quality Control Board |
| RM | river mile |
| RMP | Resource Management Plan |
| ROD | Record of Decision |
| SAB | Scientific Advisory Board |
| SHPO | State Historic Preservation Office |
| SMARA | Surface Mining and Reclamation Act |
| $SO_2$ | sulfur dioxide |
| SONCC | Southern Oregon/Northern California Coast |
| SR | State Route |
| SRA | shaded riverine aquatic |
| STNF | Shasta-Trinity National Forest |
| SWPPP | Storm Water Pollution Prevention Plan |
| TAC | Toxic Air Contaminant |
| TCRCD | Trinity County Resource Conservation District |
| TMC | Trinity Management Council |
| TRD | Trinity River Division |
| TRGA | Trinity River Guides Association |
| TRRP | Trinity River Restoration Program |
| UJC | Upper Junction City |
| UPL | Obligate Upland Plants |
| USACE | U.S. Army Corps of Engineers |
| USC | United States Code |
| USDI | U.S. Department of Interior |
| USFS | U.S. Forest Service |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| VAU | visual assessment unit |
| VFD | volunteer fire department |
| WSE | water-surface elevation |
| WHR | Wildlife Habitat Relationships |
| WSRA | Wild and Scenic Rivers Act |
| YT | Yurok Tribe |

# Chapter 1

# 1 INTRODUCTION AND BACKGROUND

*page left intentionally blank*

Chapter 2

# 2 PROJECT DESCRIPTION AND ALTERNATIVE DEVELOPMENT

*page left intentionally blank*

# Chapter 3

# 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## 3.1 Introduction to the Analysis

This chapter describes the existing resources at the Lower Steiner Flat and Upper Junction City Channel Rehabilitation Sites as well as in the proposed spoil area within the boundary of the Lower Junction City Rehabilitation Site and presents an analysis of the potential environmental impacts associated with implementing the proposed activities. The anticipated impacts of the alternatives, including those required for both CEQA and NEPA, are analyzed in this chapter. The analyses are presented by environmental resource area. The analysis for each resource area includes discussions of the existing environmental setting, applicable significance criteria, potential environmental impacts, and mitigation measures. The contents of each of these discussions are described briefly in the following subsections.

### 3.1.1 Affected Environment/Environmental Setting

The affected environment/environmental setting section for each resource area describes the existing conditions using the most current information available. Conditions existing at the time of the Notice of Preparation (NOP) for the Trinity River Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites Master EIR (March 2008) are used to establish the environmental baseline for CEQA purposes (CEQA Guidelines Section 15126.6(e)(1)). Throughout the remainder of this document, this baseline will provide the basis for determining whether the Proposed Project's environmental impacts are likely to be significant.

### 3.1.2 Environmental Consequences/Impacts and Mitigation Measures

Under CEQA, the concept of environmental "impacts" or environmental "effects" (the terms are used synonymously), as well as the determination of the significance of those impacts, is focused on changes in the existing physical conditions in the affected environment. The impacts of these projects are identified and the level of significance of the impacts is determined in the following sections of this chapter. The impact analyses consider the type, size, location, and intensity of the potential effects associated with the activities proposed at the Lower Steiner Flat (LSF) and Upper Junction City (UJC) Channel Rehabilitation Sites. The subsections presented in the Environmental Consequences section for each resource area are described briefly below.

#### 3.1.2.1 Methodology

This subsection identifies the methods used to analyze impacts, as well as the key assumptions used in the analysis process.

#### 3.1.2.2 Significance Criteria

This subsection presents the criteria and thresholds used to identify potentially significant effects on the environment, in accordance with Public Resources Code section 21082.2 and CEQA

Guidelines sections 15064 and 15065. "Thresholds" include guidance provided by the CEQA Guidelines, agency standards, legislative or regulatory requirements as applicable, and professional judgment. All impacts that do not exceed the stated significance criteria described for each section are assumed to be less than significant and are therefore not discussed in detail (Pub. Resources Code, § 21100 and CEQA Guidelines § 15128).

#### 3.1.2.3 Summary of Impacts Table

At the beginning of the Impacts and Mitigation Measures subsection is a table that identifies all of the impacts evaluated for that particular environmental issue area. Included in this summary table are the various levels of significance (i.e., no impact, less than significant, significant) for the Proposed Project and No-Project alternatives. The tables also indicate what the level of significance would be after mitigation is implemented.

#### 3.1.2.4 Impacts and Mitigation Measures

In this subsection, each impact statement is presented followed by a detailed impact analysis. Mitigation measures that would reduce significant impacts associated with implementation of the Proposed Project to less than significant levels are identified after each impact discussion and are provided in Appendix A. An alphanumeric coding system that corresponds to the mitigation measures found in Appendix E of the Master EIR is used to identify each mitigation measure.

### 3.1.3 Mitigation and Monitoring Program

California PRC section 21081.6(a), subdivision (a), requires lead agencies under CEQA to "adopt a reporting and mitigation monitoring program… in order to mitigate or avoid significant effects on the environment." Mitigation measures that will be implemented in association with the Proposed Project are clearly identified and presented in Appendix A in language that will facilitate establishment of a monitoring and reporting program. In addition, Appendix A includes a number of design elements and construction criteria that are incorporated into the Proposed Project. Relevant information described in Appendix A will also be included as environmental commitments in conjunction with any mitigation measures adopted by the Regional Water Board as conditions for project approvals. The conditions for project approvals will be included in a MMRP to verify compliance. The MMRP for this project is included as Appendix A. The approval of such a program will be part of any action taken by the Regional Water Board with respect to the Proposed Project. When other state, regional, or local agencies subject to CEQA approve portions of the Proposed Project under their jurisdiction or regulatory power, these "responsible agencies" will be required to adopt their own MMRPs (Cal. Code Regs., tit. 14, § 15097, subd. (d)).

## 3.2 Land Use

This section describes existing and planned land uses in the vicinity of the Proposed Project and evaluates the potential impacts to land uses from project implementation. More information about this resource is presented in the Trinity River Master EIR (Section 4.2) and that information is incorporated herein by reference.

## 3.2.1 Affected Environment/Environmental Setting

### 3.2.1.1 Existing Land Uses

All of the land within the Lower Steiner Flat Rehabilitation Site boundary (81.62 acres) is managed by the BLM (see Figure 2). Privately owned land (39.27 acres), BLM-managed land (18.29 acres), and a small amount of county land (0.53 acres) are present within the boundary of the Upper Junction City Rehabilitation Site (see Figure 3). The land within the Lower Junction City Rehabilitation Site where the U-3 spoil area is located is on private land. Public land in and adjacent to the Proposed Project sites is primarily used for resource management and recreation and is managed for multiple uses in conformance with specific agency guidance documents. BLM-managed lands are administered in accordance with BLM's Redding Resource Management Plan (RMP), and USFS lands are managed in accordance with the Shasta-Trinity National Forest (STNF) Land and Resource Management Plan (LRMP). These plans discuss the general condition of natural resources in the respective plan areas and prescribe appropriate land use management for lands within the plan jurisdiction. Relevant land use plans are summarized in Section 4.2.2 of the Trinity River Master EIR.

Weaverville is the largest community in Trinity County with a 2010 population of 3,600 (U.S. Census Bureau 2011). It is located 45 miles west of Redding on SR-299 adjacent to Weaver Creek, a tributary to the Trinity River. Douglas City, near the junction of SR-3 and SR-299 approximately 6 miles south of Weaverville, has an estimated population of 713. Junction City, located on SR-299 approximately 9 miles west of Weaverville, has an estimated population of 680.

The small communities of Junction City and Douglas City, which are near the Proposed Project sites, are situated adjacent to the Trinity River in areas where terrain is relatively gentle. Development in these rural communities is primarily residential, typified by scattered single-family residences and mobile homes. The landscaping of residential developments within the Trinity River corridor has often encroached on the river's floodplain and that of its tributaries. The Trinity River near the Proposed Project sites is used by anglers, rafters, wildlife watchers, and tourists. The river is accessible at several public and private locations throughout the area.

Existing land uses typical of the area are primarily residential, timber and other resource production, recreation, and open space. In general, privately owned parcels within and adjacent to these sites have been subdivided to the fullest extent possible under existing zoning designations. Therefore, future rural residential development on the uplands, above the river's floodplain, would be minimal. Future development is further restricted by the proximity of parcels to the Trinity River; many of these parcels are zoned Flood Hazard and Open Space. Proposed channel rehabilitation activities would not result in any changes that would conflict with future proposed land uses.

### 3.2.1.2 Local Land Use Planning

#### TRINITY COUNTY GENERAL PLAN

The project sites are located in Trinity County. The Trinity County General Plan (Trinity County 2003) applies to privately owned lands in the Upper Junction City project area; these lands fall under several of the county's land use designations. The County has established zoning districts for planning purposes. For a detailed discussion of Trinity County General Plan land uses and definitions, refer to the Trinity River Master EIR (Section 4.2, Table 4.2-1).

#### JUNCTION CITY COMMUNITY PLAN

The Junction City Community Plan (Trinity County 1987) covers approximately 42 square miles (27,000 acres) centered around the Trinity River from Maxwell Creek to Helena. There are approximately 16.5 miles of river frontage in the rural community of Junction City; private lands account for 36 percent of these lands. Neighborhoods that are adjacent to the river include Dutch Creek Road, Sky Ranch Road, Community Core, and Red Hill Road. Land uses along the river in Junction City vary by neighborhood and include timber and other resource production, agricultural, residential, commercial, village, and open space. These land uses occur at varying densities, which range from 2.5 to 160 acres.

The Upper Junction City Rehabilitation Site is within the Junction City Community Plan area, between the Community Core and Dutch Creek Road neighborhoods, and the U-3 spoil area within the Lower Junction City Rehabilitation Site boundary is located between the Community Core and the Red Hill Road neighborhoods. Land use designations in these neighborhoods are typical of the community plan area, primarily Rural Residential, Open Space, and Resource designations, with a small area in the Community Core neighborhood designated as Village.

#### DOUGLAS CITY COMMUNITY PLAN

The Douglas City Community Plan (Trinity County 1987) covers approximately 35 square miles (22,400 acres) centered on the Trinity River from slightly downstream of Grass Valley Creek to slightly downstream from Steiner Flat. Approximately 32.2 miles of river frontage exist in the rural community of Douglas City; private lands account for 46 percent of the lands bordering the river.

The Lower Steiner Flat Rehabilitation Site is within the Douglas City Community Plan area in the Steiner Flat neighborhood. The neighborhoods in this area typically include Rural Residential, Village, Open Space, and Resource land use designations. These land uses occur at varying densities that generally reflect available public services and environmental constraints. Public and private fishing and river access areas occur throughout the plan area.

#### TRINITY COUNTY ZONING

The Trinity County Zoning Ordinance is discussed in Section 4.2 of the Trinity River Master EIR, including details about Trinity County zoning districts that apply to lands in the area. All areas in the 100-year floodplain of the Trinity River have been designated by Trinity County as Scenic Conservation Zones. Nearly all of the Upper Junction City Rehabilitation Site and a portion of the Lower Steiner Flat Rehabilitation Site and the Lower Junction City Rehabilitation Site are located in the 100-year floodplain of the Trinity River as determined by FEMA. Sites in the 100-year floodplain have been designated as Zone A, Zone AE, Zone X, and Zone X500 Flood Hazard Areas[1] and areas within the 100-year floodplain are designated by Trinity County as Scenic Conservation Zones. Both the Lower Steiner Flat and the Upper Junction City sites are within the AE zone where detailed flood insurance study has defined the 100 year flood zone.

### 3.2.1.3 Relevant Land Use Plan

BLM's Redding Field Office manages public lands in the Trinity River basin in accordance with BLM's Redding RMP (BLM 1993) which in turn requires compliance with the Aquatic Conservation

[1] Zone A is an area inundated by 100-year flooding for which no Base Flood Elevation (BFE = 100 year flooding water surface elevation) has been determined. Zone AE is an area inundated by 100 year flooding for which the BFE has been estimated. Zone X is an area inundated by 100-year flooding with average depth of less than one foot, or with drainage areas less than one $mi^2$, or areas protected by levees from a 100-year flood event. Zone X500 is an area between the 100 and 500 year floodplain.

Strategy (ACS) for Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl. This RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan jurisdiction including BLM-managed lands encompassed within the Proposed Project site boundaries. See section 4.2.2 in the Trinity River Master EIR for more information about the RMP and Appendix A of the Master EIR for the Project's Aquatic Conservation Strategy Consistency Evaluation. The TRRP project reach is federally designated with a recreational status under the Wild and Scenic System. BLM is the federal river manager from Lewiston Dam to the North Fork Trinity. As the river manager, BLM must follow management guidelines identified in the Wild and Scenic Rivers Act (WSA). More information on Wild and Scenic River management is provided in the recreation section of the Trinity River Master EIR (4.8) and this EA/IS (Section 3.8).

## 3.2.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.2.2.1 Methodology

The methodology used for the land use impact analysis involved an assessment of the compatibility of the Proposed Project with relevant plans and policies and a review of the Trinity County General Plan, Junction City Community Plan, Douglas City Community Plan, and zoning in relation to surrounding land uses and site features. The analysis was conducted through a literature review and site visits.

### 3.2.2.2 Significance Criteria

The following significance criteria were developed in the Trinity River Master EIR and are based on guidance provided by CEQA guidelines. Impacts to land uses would be significant if they would:

- Result in land uses that are incompatible with existing and planned land uses adjacent to actions described as part of the project;
- Conflict with any applicable land use plan, policy, ordinance, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Disrupt or divide the physical arrangement of an established community;
- Result in substantial nuisance effects on sensitive land uses that would disrupt use over an extended time period;
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; or
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

### 3.2.2.3 Impacts and Mitigation Measures

Table 4 summarizes land use impacts that could result from implementation of the No-Project and Proposed Project alternatives.

| Table 1. Summary of Potential Land Use Impacts for the No-Project and Proposed Project Alternatives | | |
|---|---|---|
| **No-Project Alternative** | **Proposed Project** | **Proposed Project With Mitigation** |
| Impact 3.2-1. Implementation of the project could disrupt existing land uses adjacent to the rehabilitation sites. | | |
| No Impact | Less than significant | Not applicable[1] |
| Impact 3.2-2. Implementation of the project could be inconsistent with the goals, policies, and objectives of the BLM RMP, the USFS LRMP, the Trinity County General Plan, or other local community plans, policies, and ordinances. | | |
| No Impact | Less than significant | Not applicable[1] |
| Impact 3.2-3. Implementation of the project may affect the availability of a locally important mineral resource recovery site. | | |
| No Impact | Less than significant | Not applicable[1] |

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

Impact 3.2-1: Implementation of the project could disrupt existing land uses adjacent to the rehabilitation sites.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no restoration activities would occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

The Proposed Project would not introduce a new land use within the boundaries of the sites, nor would it obstruct the water conveyance functions of the 100-year floodplain. Project activities that aim to restore floodplain functions would have long-term benefits for many land uses that are located along the Trinity River.

The Proposed Project is designed to minimize short-term disruptions to the communities of Junction City and Douglas City that could occur because of rehabilitation activities at the sites. Construction and staging areas would be located in and adjacent to the 100-year floodplain, which is designated as a Scenic Conservation overlay and is generally free of development. All of the activities at the Lower Steiner Flat Rehabilitation Site would be located on public lands (refer to Figure 2). Because activities at the Lower Steiner Flat site would occur in two phases there would be two periods of disruption, one in 2012 and one at a future date. A percentage of the activities at the Upper Junction City Rehabilitation Site would be located on public lands but some would also be located on private lands and all of the activity at the U-3 spoil area in the Lower Junction City Rehabilitation Site boundary would be on private lands (refer to Figure 3). Staging, construction, and access on private lands in and adjacent to the Upper Junction City and Lower Junction City site boundaries would require landowner approval. Work within the Dutch Creek Road and Steiner Flat Road easements would require Trinity County encroachment permits and traffic control for ingress and egress. Residential and commercial development located within or near the Upper Junction City Rehabilitation Site would be outside the areas of direct impact associated with the Proposed Project; there are no residential and commercial developments within the Lower Steiner Flat Rehabilitation Site or within the U-3 spoil area in the Lower Junction City Rehabilitation Site. Project staging and construction activities at the Upper Junction City Rehabilitation Site would occur in proximity to several residences which exist on river left adjacent to Dutch Creek Road; however, project activities would not interfere with, preclude, or conflict with adjacent land uses.

Based on the analysis above, potential conflicts with or disruptions to adjacent land uses resulting from activities associated with the Proposed Project would be temporary and less than significant. As discussed in Section 3.16, Transportation and Traffic, no road closures would result from implementation of the Proposed Project. Access to adjacent residences would be maintained during project construction and post-construction monitoring activities (refer to Appendix A).

Construction activities in the river channel could interrupt adjacent land uses for short periods; but they would not preclude the use of nearby businesses or residences. Construction and transportation associated with the Proposed Project could produce minor nuisance effects (i.e., air quality, aesthetics, and noise) at some nearby residences; however, such impacts would be temporary and would not significantly affect the ability to use adjacent lands. Project impacts associated with air quality, aesthetics, and noise are discussed below in Sections 3.11, 3.12, and 3.14, respectively.

Impact 3.2-2: Implementation of the Proposed Project may be inconsistent with the goals, policies, and objectives of the STNF LRMP, BLM's RMP, and the Trinity County General Plan, as well as local community plans, policies, and ordinances.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, rehabilitation activities would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

Implementation of activities proposed at the Proposed Project sites would not introduce land uses that are incompatible with existing or proposed land uses, nor would rehabilitation activities conflict with any applicable land use plan, policy, or ordinance. The discussion provided for this impact in Section 4.2.2 of the Trinity River Master EIR summarizes the project's consistency with federal, state, and local plans, policies, and ordinances. The impacts would be less than significant.

Impact 3.2-3: Implementation of the project may affect the availability of a locally important mineral resource recovery site.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no rehabilitation activities would be implemented. Therefore, there would be no impact.

#### PROPOSED PROJECT

Currently, there are two active aggregate mining operations near the Proposed Project sites. The Smith aggregate mine (operated by Concrete Aggregate Products from Weaverville) is located approximately half a mile downstream from the Upper Junction City site, within the Hocker Flat ESL. This operation does not entail activities in the active river channel and is buffered from the active channel by a large berm. Implementation of the Proposed Project would not affect mineral resource extraction at Hocker Flat. The Eagle Rock mine is another aggregate mining operation located upstream of Junction City. This operation is adjacent to Poison Gulch, which is a tributary of Oregon Gulch. This aggregate mining operation does not include operations in or adjacent to the Trinity River. Implementation of the Proposed Project would not affect mineral resource extraction in Poison Gulch.

Although there are two active mining claims at the Lower Steiner Flat site, there are no locally important mineral recovery sites identified by the state within the boundaries of the Proposed Project sites. The TRRP has worked closely with the mining community to locate site boundaries in a manner that minimizes any impacts to future mineral recovery efforts and would continue to be involved in dialog with the mining community to address concerns related to mining. Because there are no state-identified locally important mineral recovery sites within the boundaries of the Proposed Project sites this impact would be less than significant.

## 3.3 Geology, Fluvial Geomorphology, Minerals, and Soils

Section 4.3 of the Trinity River Master EIR describes geologic, fluvial geomorphic, and soils resources in the vicinity of the Proposed Project sites and that information is incorporated herein by reference. This section describes site-specific information important for the analysis and evaluates the potential impacts to these resources from implementation of the Proposed Project.

### 3.3.1 Affected Environment/Environmental Setting

#### 3.3.1.1 Fluvial Geomorphology

A discussion of the regional and local fluvial geomorphology is included in the Trinity River Master EIR (Section 4.3). The geomorphic environment of the Proposed Project sites is directly affected by the hydrology, channel bed composition, sediment regimes, and riparian vegetation present. Modification of the channel and floodplain configuration has altered and simplified the natural diversity of geomorphic processes and products within the sites, hence limiting the variety of channel forms, habitats, and vegetation structures.

Extensive modification of historic and modern alluvial landforms within the sites is evident by the aerial extent of channel modifications resulting from historic mining and, more recently, impacts related to the TRD. A comprehensive discussion of these modifications is provided in the Trinity River Master EIR (Section 4.10, Cultural Resources). Table 5 provides a summary of the geomorphic features for the sites.

**Table 2. Geomorphic Features within the Proposed Project Boundaries**

| GEOMORPHIC FEATURE | LOWER STEINER FLAT (ACRES) | UPPER JUNCTION CITY (ACRES) |
|---|---|---|
| Vegetated Riparian Berm* | 3.625 | 4.063 |
| Floodplain | 3.505 | 2.283 |
| Bedrock | 0.858 | 0.078 |
| Bar | 1.305 | 0.483 |
| Modified Terrace* | 39.641 | 27.072 |
| Upland Hillslope | 18.327 | 5.566 |
| Water | 13.553 | 6.81 |

* = Human induced geomorphic feature

The mainstem Trinity River flows generally northwest to west through the Upper Junction City site and southwest to northwest through the Lower Steiner Flat site. The following description uses the river left or left bank and river right or right bank concept to describe the location of resources on each side of the river. River left and river right are defined from the standpoint of someone looking downstream.

The Lower Steiner Flat site is located on the Trinity River between RM 90.2 and 91.3. This reach of the river is confined by relatively narrow valley walls and adjacent steep topography (Figure 7). The approximately 1-mile long reach includes two 90-degree right (facing downstream) bends separated by a straight section 0.3 miles long; the two 90-degree bends are forced by geologic constraints (the valley walls), but they also contribute to the geomorphic potential of the reach. Because of the geologic characteristics of the reach, much of this area is not accessible to even the highest flows.

The Trinity River in this reach is confined by narrow, steep valley walls, and by high terraces underlain by large boulders or by dredge tailings. Through most of the reach, the river is a single-thread, but the downstream end includes a split flow section or anabranch. The reach contains riffles, pools, and some alternating bars typical of meandering rivers, but the river is not freely meandering. In general, the planform features of the reach are fixed by valley constraints (large bends in the valley), rather than from self-formed meanders (CH2MHill 2011).

Most of the floodplain habitat through the reach is near the channel margins, with wider areas generally on the right bank more than on the left bank. The area includes two high terraces on the right bank (between RM 91.2 and 91.7 and between RM 90.1 and 90.5) which have active mining claims. The downstream right bank terrace also contains the popular Steiner Flat campground, which is used extensively by the public. Fishing, rafting, and swimming are popular activities through the Lower Steiner Flat reach.

The valley floor through the reach ranges in width from 500 to 1,500 feet; however, the wider zones in the reach are occupied by high terraces, some of which are underlain by boulders and/or bedrock. The two large benches on the right bank (approximately centered on RM 90.9 and 90.3) are too high to be accessed except during extreme flows (and any rehabilitation actions in these areas may also be constrained by mining claims). The elevated surface bordering the left bank in the upper third of the reach (from RM 91.2 to 90.8) also appears to be underlain by large boulders and dredge tailings. This surface is too high to be inundated during ROD releases, even during the highest estimated releases.

There is a vegetated medial bar or island near the downstream end of the reach that bifurcates flow in the mainstem; the secondary channel west of the medial bar was observed to convey approximately 20 to 30 percent of the flow (approximately 520 cfs), even during mid-summer low flow (CH2MHill 2011). This feature appears to be sustainable from a geomorphic and sediment transport perspective, and it provides high quality rearing and spawning habitat during low flow.

Another notable feature in the Lower Steiner Flat reach is a long, constructed side channel located on the right bank between RM 90.15 and RM 90.5. This side channel was constructed in the early 1980s (Glase 1994), and it generally follows a remnant channel created by the dredging. It has a single primary inlet and outlet with one area near the middle that provides lateral flow exchange with the main channel at higher flows, as confirmed by the hydraulic model (discussed below).

Even though this side channel has persisted at least 30 years, its year-round habitat value could be enhanced (CH2MHill 2011).

The Upper Junction City Rehabilitation Site is located on the Trinity River between approximately RM 79.8 and 80.4. The river segment in the Upper Junction City Rehabilitation Site has been severely impacted by historical mining activities. Both the dredging and river re-incision into mining debris washed down from the tributaries have likely contributed to channelization of the present stream and its disconnection from the adjacent bottom lands.

The site consists of two long bends around two arc-shaped terraces (Figure 8). The more upstream terrace on river left consists of high barren flats of compacted tailings and several piles of loose tailings, one of which is currently being actively recruited into the river near the center of the site. Pockets of vegetation are located in pits and swales at the base of the tailings. The more downstream terrace on river right includes barren tailings flats with a fringe of riparian vegetation along the river bank, and a vegetated swale along the distal edge of the terrace adjacent to the valley hillslope (USFWS and USBR 2011).

Channel morphology includes two subtle crossing riffles in the upper half of the site, pool habitat along the right bank of the more upstream bend, and a large bar complex in the downstream third of the site. This bar complex is formed from gravel recruited off the eroding tailings pile on river left, and in 2010 created a backwater that, at baseflow, extended as far as the most upstream riffle crossing. The 2011 spring high-flow release from Lewiston Dam, which peaked at close to 12,900 ft3/s at the site, caused considerable additional erosion along the full length of that tailings pile, as well as along the left stream bank for a distance of about 200' downstream from the tailings. The extreme upstream end of the site is occupied by a long (> 700 feet) riffle. The overall slope of the site is 0.0024, however, the drop is concentrated on the long riffle at the far upstream end of the site and on the slip face of the bar complex at the far downstream end of the site. The slope through the backwatered center of the site is nearly flat (USFWS and USBR 2011).

Through most of the site, the channel is entrenched between the terraces, as well as a portion of the Highway 299 embankment and other high surfaces with structures. As a result, the average channel width through the upstream half of the site is about 90 feet. The channel gets progressively wider in the downstream direction due to the presence of the bar complex and the backwatered zone upstream from it. The Dutch Creek Bridge locks the position of the downstream end of the reach in place. Overall, the potential for large-scale changes in channel planform is limited, short of undertaking massive excavation of the left-hand terrace (USFWS and USBR 2011).

#### 3.3.1.2 Mineral Resources

The geologic properties of many of the units in the KMP are related to their origins as oceanic crust and/or their intrusion by plutonic bodies. These properties have resulted in mineralization that is widely distributed. Many minerals of economic importance are present, including gold, copper, zinc, chromite, manganese, platinum, silver, and mercury. These minerals have been mined from the advent of European settlement to the present by a variety of methods.

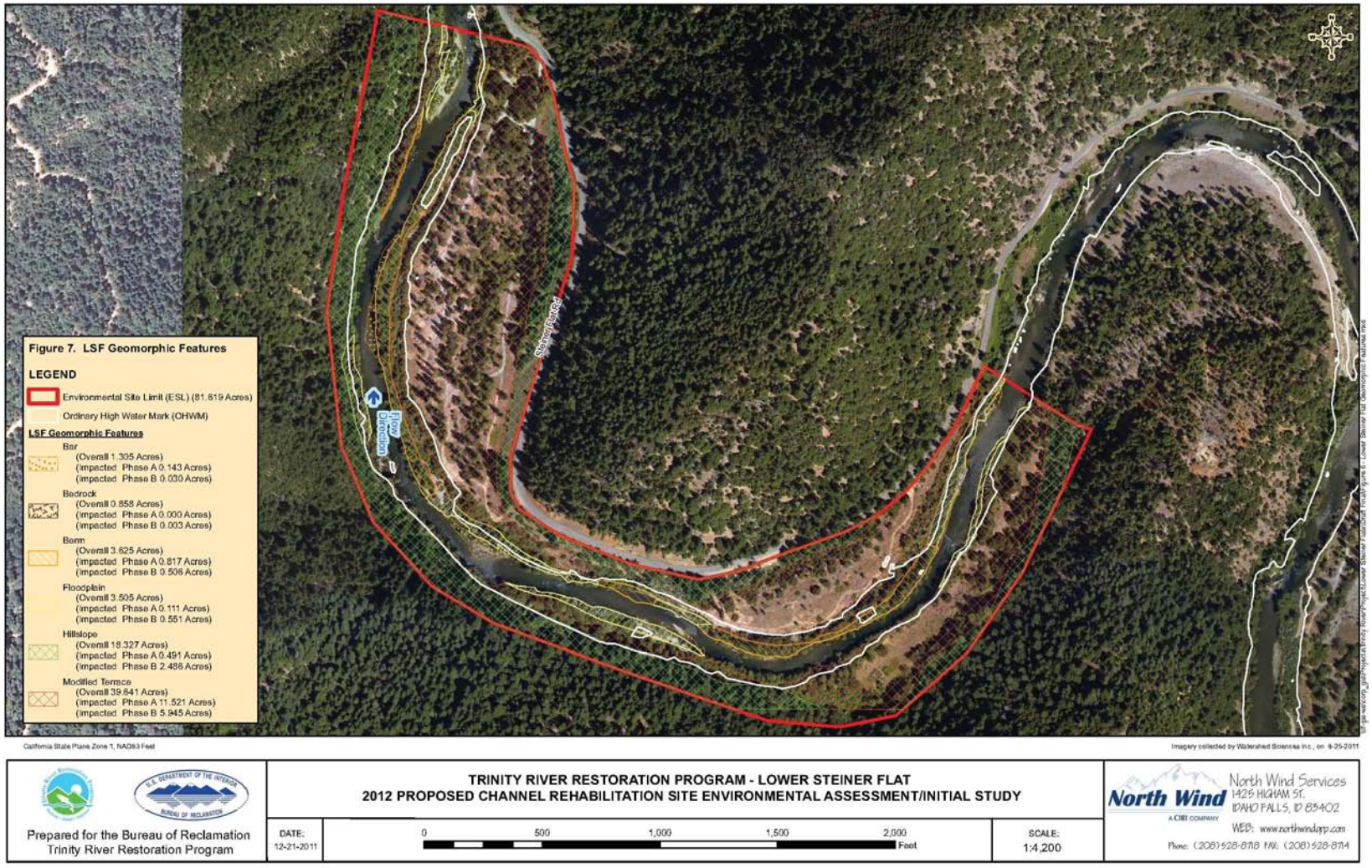


**Figure 1. Geomorphic Features at the Lower Steiner Flat Rehabilitation Site.**

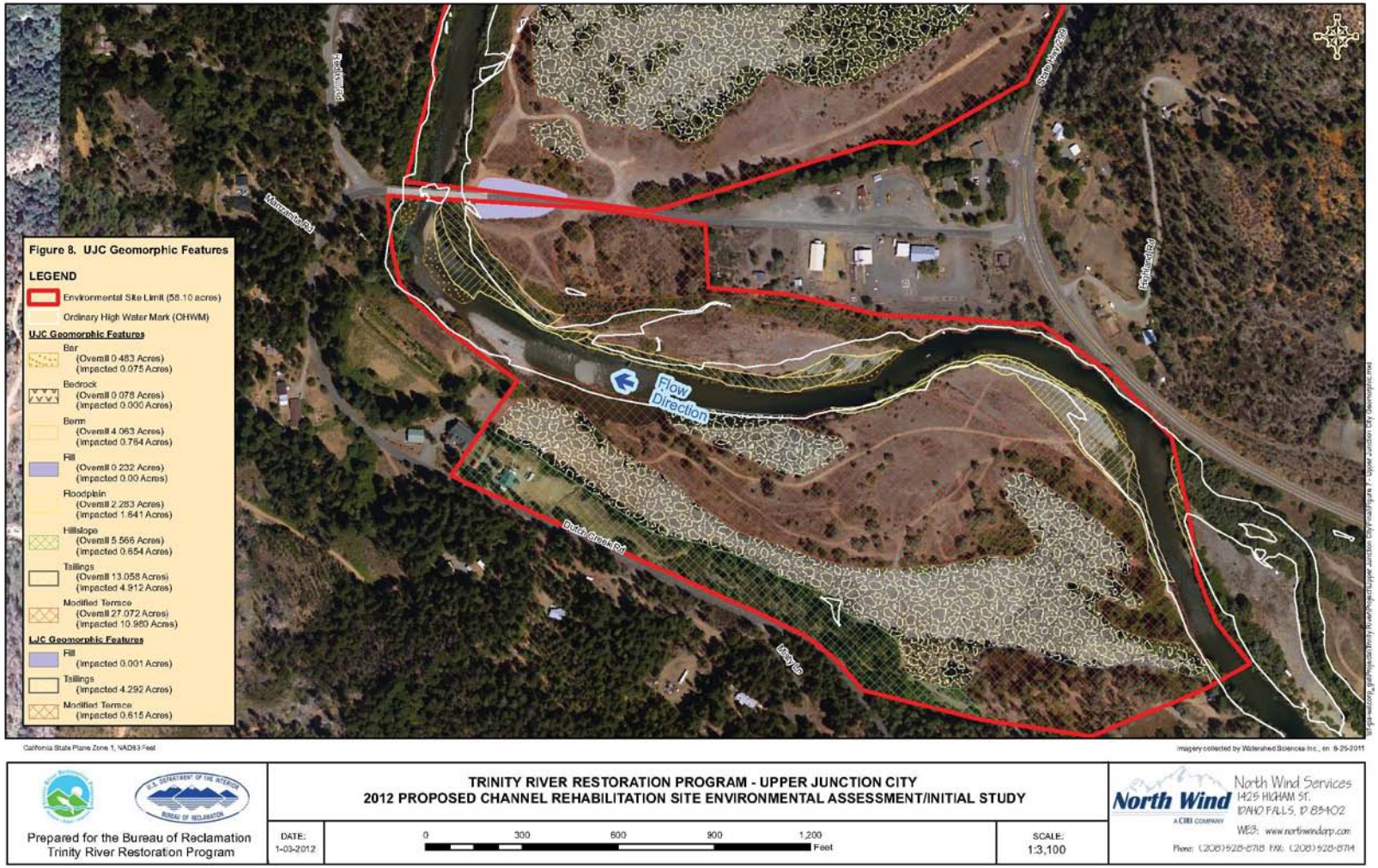


**Figure 2. Geomorphic Features at the Upper Junction City Rehabilitation Site.**

Historically, the principal mineral of economic importance was gold. Both lode (hardrock) mines and placer (alluvial gravel) mines were present in the watershed with activity from 1848 to the present. The tailing deposits associated with large-scale placer mining provide a substantial source of aggregate required in various construction projects. Since World War II, mineral extraction activities have focused on aggregate resources, although some gold mining activity continues, primarily using suction dredging. Placer mining has left tailing deposits that are apparent at the rehabilitation sites and that continue to influence the form and function of the Trinity River. Over time, aggregate mining of alluvial deposits and reworking of hydraulic tailings have resulted in additional channel modifications and changes in sediment supply.

The General Mining Law of 1872 is one of the major statutes that direct the federal government's land management policy. The law grants free access to individuals and corporations to prospect for minerals in public domain lands and allows them, upon making a discovery, to stake (or "locate") a claim on that deposit. Sections of the Trinity River that are under federal jurisdiction are therefore open to prospecting. There are 36 named active mining claims (BLM 2008) associated with the Trinity River in the 40-mile reach below Lewiston Dam. BLM records identify most of these claims as placer claims. Placer claims are established with the intent to sort unconsolidated alluvial materials for precious metals (e.g., gold, platinum). Currently, there are no authorized operating plans for placer mining activities within or in close proximity to any TRRP rehabilitation sites; however, there are two mining claims at the Lower Steiner Flat site where casual mining with non-motorized equipment frequently occurs. While suction dredging is the principal mining method used on the Trinity River, there is currently a moratorium on suction dredging throughout California pending completion of a Suction Dredge Permitting Program EIR by the CDFG that analyzes impacts of dredging on state fish and wildlife resources. The Draft Supplemental EIR for the Suction Dredge Permitting Program was made available for public comment in February 2011 (CDFG 2011a) and the Final Supplemental EIR and regulatory updates are anticipated for February 2012. A Notice of Determination and CEQA Findings are expected by spring 2012.

Other than mining activities authorized under the Surface Mining and Reclamation Act (SMARA), information on private mining activities in Trinity County is limited. According to records provided by BLM and Trinity County, there are currently no approved mining activities operating under the provisions of the 1872 mining law or a county SMARA permit within, or in close proximity to, the Proposed Project sites. There are, however, two active mining operations in the region that operate under a County SMARA permit, the Eagle Rock Mine and the Smith Mine. The Eagle Rock mine, a sand and gravel extraction company, is currently operating at the site of the historic La Grange Hydraulic Gold Mine upstream of Junction City. The Smith Mine is active on an intermittent basis based on market conditions.

The Proposed Project sites have been heavily disturbed by previous mining activities. Dredger mining impacts in the Steiner Flat area (especially about 1 mile upstream of the Lower Steiner Flat Rehabilitation Site) were less devastating than in some other reaches along the Trinity River (USFWS and HVT 1999). However, historic aerial photographs of the reach from 1944 show an unvegetated and braided channel, confined by dredge spoils (CH2MHill 2011). Active mining claims exist on the two high terraces on the right bank (between RM 91.2 and 91.7 and between RM 90.5 and 90.1). TRRP is working closely with BLM to ensure that construction efforts are consistent with BLM's long-term management goals for the site, where mining claims presently exist.

The Upper Junction City Rehabilitation Site river segment is severely impacted by historical mining activities, which include valley and channel aggradations caused by upslope hydraulic mining, followed by bucket-line dredging of the channel and valley bottom (Krause et al. 2010). Both the dredging and river re-incision into mining debris washed down from the tributaries have likely contributed to channelization of the present stream and its disconnection from the adjacent bottom lands. There are no mining concerns at the Lower Junction City site.

#### 3.3.1.3 Geologic Hazards

A discussion of the regional seismicity and seismic hazards is provided in the Trinity River Master EIR (Section 4.3). No local active Quaternary faults have been identified, although little detailed mapping of Quaternary geologic features has been conducted in the area. The soils bordering the Trinity River are predominantly alluvial in nature and have the potential to experience liquefaction – a process whereby water-saturated granular soils are transformed to a liquid state during ground shaking; however, the type of activities described in Chapter 2 would not affect the potential for liquefaction or be affected by liquefaction were it to occur.

#### 3.3.1.4 Soils

The soils at the Proposed Project sites are described in the Soil Survey of Trinity County, California, Weaverville Area (USDA 1998). There are five main soil types in the project area at the Lower Steiner Flat Rehabilitation Site. They are 102 - Atter-Dumps, Dredge Tailings-Xerofluvents Complex, 2 to 9 percent slopes; 112 – Brownbear-Bamtush Complex, 30 to 50 percent slopes; 118 – Cargent-Demogul association, 50 to 75 percent slopes; 134 – Demogul Gravelly Loam, 50 to 75 percent slopes; and 217 – Xerofluvents-Riverwash Complex, 0 to 5 percent slopes. There are three main soil types at the Upper Junction City Rehabilitation Site. They are 101 – Atter Extremely Gravelly Loamy Sand, 9 to 15 percent slopes; 102 - Atter-Dumps, Dredge Tailings-Xerofluvents Complex, 2 to 9 percent slopes; and 217 – Xerofluvents-Riverwash Complex, 0 to 5 percent slopes. The soil types within the U-3 spoil area at the Lower Junction City Rehabilitation Site are 102 – Atter-Dumps, Dredge Tailings-Xerofluvents Complex, 2 to 9 percent slopes, and 218 – Xerorthents-Rock Outcrop Complex, 2 to 15 percent slopes. Brief descriptions of these are included below.

**101 – Atter Extremely Gravelly Loamy Sand, 9 to 15 percent slopes.** This map unit is found on alluvial fans and stream terraces. This unit is about 80 percent Atter and similar soils and 20 percent minor components consisting of xerofluvents (5 percent), rock outcrop (5 percent), Weaverville (5 percent), and xeralfs (2 percent). The Atter soil is very deep and is somewhat excessively drained. Permeability is rapid in the Atter soil. Available water capacity is very low. Runoff is slow, and the hazard of water erosion is slight.

**102 – Atter-Dumps, Dredge Tailings-Xerofluvents Complex, 2 to 9 percent slopes.** This map unit is on alluvial fans, stream terraces, and floodplains that have been altered by dredging operations. This unit is about 50 percent Atter extremely gravelly loamy sand; 20 percent Dumps, dredge tailings; and 15 percent Xerofluvents. The Atter soil is very deep and is somewhat excessively drained. Permeability is rapid in the Atter soil. Available water capacity is very low. Runoff is slow, and the hazard of water erosion is slight. Dumps and dredge tailings consist of nearly barren mounds deposited along stream channels by dredge mining activities. Permeability is rapid in areas of the dumps. Runoff is medium, and the hazard of water erosion is slight. Xerofluvents consist of well-drained soils that formed in alluvium derived from mixed rock sources.

Permeability is moderate or rapid in the Xerofluvents. Available water capacity is very low or low. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. These soils are subject to flooding during prolonged, high-intensity storms. The frequency of the flooding ranges from rare to frequent; channeling and deposition are common along streambanks (USDA 1998).

**112 – Brownbear-Bamtush Complex, 30 to 50 percent slopes.** This map unit is on mountains. The unit is 50 percent Brownbear soils and 30 percent Bamtush soils. The Brownbear soil is moderately deep and well drained. The Bamtush soil is very deep and well drained. For both Brownbear and Bamtush soils, permeability is moderate, available water capacity is low, and runoff is rapid. This unit also includes about 20 percent minor components. This soil map unit is on the hillslope above the river and floodplain and is not subject to flooding (USDA 1998).

**118 – Cargent-Demogul association, 50 to 75 percent slopes.** This map unit is on mountain slopes and ridges. This soil unit is 45 percent Cargent soils, 35 percent Demogul soils and 20 percent minor components. The Cargent soil is moderately deep and is well drained. Permeability is moderately high to high in the Cargent soil. Available water capacity is low, and runoff is very rapid. This soil map unit is on the hillslope above the river and floodplain and is not subject to flooding (USDA 1998).

**134 – Demogul Gravelly Loam, 50 to 75 percent slopes.** This very deep, well-drained soil is on mountains. This unit is about 80 percent Demogul soils and 20 percent minor components. Permeability is moderately slow, available water capacity is high, and runoff is very rapid. This soil map unit is on the hillslope above the river and floodplain and is not subject to flooding (USDA 1998).

**217 – Xerofluvents-Riverwash Complex, 0 to 5 percent slopes.** This map unit is on floodplains and stream terraces. It formed in alluvium derived from mixed rock sources. This unit is about 45 percent Xerofluvents and 35 percent Riverwash. Varying areas of the stream channel occur within this map unit that are under water during some times of the year. Xerofluvents consist of well-drained soils that formed in alluvium from mixed rock sources. Permeability is moderate to rapid in the Xerofluvents. Available water capacity is very low or low, and runoff is slow or medium. These soils are subject to flooding during prolonged, high-intensity storms. Channeling and deposition are common along streambanks. Riverwash consists of nearly barren, unstabilized, stratified sandy, silty, clayey, stony, cobbly, or gravelly alluvium derived from mixed rock sources. Areas of Riverwash are flooded, channeled, and reworked nearly every winter (USDA 1998).

**218 – Xerorthents-Rock Outcrop Complex, 2 to 15 percent slopes.** This map unit represents a small portion of the area within the Lower Junction City boundary that is proposed for the U-3 spoil area. It eroded from hydraulic mining alluvium derived from igneous, metamorphic and sedimentary rock and is found on mountain slopes. This soil type is well drained and the available water capacity is very low. The erosion hazard is slight (USDA 1998).

## 3.3.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.3.2.1 Methodology

Data for the following analysis were taken from existing reports on regional and local geology as well as on-site assessments during field reviews. These reports include the following documents: Geology of Northern California (USGS 1966); Soil Survey of Trinity County, California, Weaverville

Area (USDA 1998); wetland delineations (North Wind 2011); Trinity River Mainstem Fisheries Restoration Program EIS; Trinity River Maintenance Flow Study Final Report (McBain and Trush 1997); Trinity County General Plan; and previously cited online and Geographic Information Systems (GIS) data sources.

### 3.3.2.2 Criteria for Determining Significance

A project would have a significant impact related to geology, geomorphology, soils, and minerals if it could subject people, structures, or other resources to geologic or seismic hazards or disrupt, eliminate, or otherwise render geologic, soil, or mineral resources unusable or unavailable. Significant impacts would occur if the project would:

- Expose people, structures, or critical utility facilities to major geologic hazards (including seismicity, landslides, seiches, and liquefaction);
- Involve changes in topography that would result in unstable soil conditions;
- Increase erosion rates to a level at which associated sedimentation levels could affect streams, rivers, or other water bodies;
- Interfere with existing, proposed, or potential development of mineral resources; or
- Be inconsistent with the ten Trinity River healthy alluvial river attributes.

### 3.3.2.3 Impacts and Mitigation Measures

Table 6 summarizes the potential geology, fluvial geomorphology, minerals and soils impacts that would result from the No-Project and Proposed Project alternatives.

**Table 3. Summary of Geology, Fluvial Geomorphology, Soils, and Minerals Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.3-1. Implementation of the Proposed Project could result in the exposure of structures and people to geologic hazards, including ground shaking and liquefaction. | | |
| No impact | No impact | Not applicable[1] |
| Impact 3.3-2. Construction activities associated with the Proposed Project could result in increased erosion and short-term sedimentation of the Trinity River. | | |
| No impact | Significant | Less than significant |
| Impact 3.3-3. Implementation of the Proposed Project would interfere with existing, proposed, or potential development of mineral resources. | | |
| No impact | Significant | Less than significant |

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

Impact 3.3-1: Implementation of the Proposed Project could result in the exposure of structures and/or people to geologic hazards, including ground shaking and liquefaction.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction activities would occur. There would be no new exposure of structures and/or people to geologic hazards. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, no permanent structures or facilities would be constructed. There would be no new exposure of structures and/or people to geologic hazards. Thus, there would be no impact.

Impact 3.3-2: Construction activities associated with the Proposed Project could result in increased erosion and short-term sedimentation of the Trinity River.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the project would not be constructed. Therefore, no construction-related erosion or associated sedimentation of the Trinity River would occur, and there would be no impact.

#### PROPOSED PROJECT

Implementation of the Proposed Project has a significant potential to increase erosion and subsequent short-term sedimentation of the Trinity River. The significance of erosion at each site would likely be influenced by the following:

- The extent that disturbed soils are exposed to flowing water;
- The extent that disturbed soils are exposed to energetic weather conditions; and
- The extent of soil compaction and associated runoff.

During or after excavation and other related construction activities, the highest rate of soil erosion would most likely occur near the margins of constructed features (e.g., side channels, alcoves, and floodplains). At these locations, the exposure of fine-textured soils during and after construction would increase the potential for soil erosion and sedimentation. Impacts of turbidity levels specific to water quality degradation are analyzed below, in Section 3.5, Water Quality, and associated impacts to anadromous fisheries are analyzed in Section 3.6, Fishery Resources.

A large portion of proposed rehabilitation activities would occur in proximity to flowing water and could expose newly disturbed and/or stable sediments and other alluvial materials to flowing water. Specifically, in-channel activities would likely disturb areas in proximity to flowing water. Riverine work areas may generally be isolated so that flowing water does not reach these areas until they are "opened" to the river. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream resulting in impacts such as short-term increases in surficial and channel erosional processes; increases in turbidity levels downstream (varying distances); and changes to type, volume and character of deposition downstream. Monitoring results from previous TRRP channel rehabilitation projects (i.e., Hocker Flat, Canyon Creek, Indian Creek, and Lewiston-Dark Gulch) demonstrate that these impacts decrease rapidly once construction activities have ceased. However, downstream turbidity levels may remain elevated for a longer duration post-construction when winter high flows wash over newly disturbed areas and seasonal fluctuations in hydrologic conditions further shape the disrupted area into a more stable geometry. Because activities at the Lower Steiner Flat site would occur in two phases there would be an increased potential for sedimentation and erosion.

Construction activities in the river and the uplands have the potential to significantly decrease soil cohesion and armoring, thus increasing soil exposure to energetic weather conditions and increasing the short-term potential for wind and water erosion. Increased wind and water erosion and subsequent downstream sediment transport in the Trinity River would occur if any soils were left exposed during the wet season (typically November through May) as well as other infrequent precipitation events (summer thunderstorms).

The use of heavy equipment for restoration activities would likely increase soil compaction; potentially causing surface water runoff. An increase in the volume of surface water runoff

increases the potential for erosion. Thus, any significant increase in soil compaction would cause a potentially significant increase in erosion. Therefore, this impact is significant.

#### MITIGATION MEASURES

Construction activities associated with the project could result in increased erosion and short-term sedimentation of the Trinity River. Therefore, mitigation measures 4.3-2a and 4.3-2b described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.3-3: Implementation of the Proposed Project would interfere with existing, proposed, or potential development of mineral resources.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the project would not be constructed. Therefore, no interference with existing, proposed, or potential development of mineral resources would occur, and there would be no impact.

#### PROPOSED PROJECT

Trinity County was historically a gold mining region, and many unpatented mining claims exist along the Trinity River. A map of 2009 active mining claims is provided in the Trinity River Master EIR (NCRWQCB and USBR 2009). The development of mineral resources may be inhibited if a mining claim occupies a rehabilitation site. At these sites, mining would likely be precluded during construction for safety reasons. Post-construction, fishery habitat improvements and riparian plantings would either preclude mining that would negatively impact rehabilitation site habitat improvements, or if mining were to be permitted in the rehabilitation areas, reclamation to habitat rehabilitation standards would be required as a permit condition. Overall, the Proposed Project could inhibit the development and extraction of mineral resources, including precious metals and aggregate resources within, and close to, the Proposed Project sites. Channel rehabilitation activities could inhibit the development of mineral resources on mining claims or private lands and would be a significant impact if such activities occurred or were planned for the stretches of the river near the Proposed Project sites.

There are two current aggregate mining activities operating through a County SMARA permit, the Eagle Rock and Smith aggregate mines. The Eagle Rock Mine is not located within hydrologic influence of the Trinity River and would not likely be affected by the Proposed Project. The Smith Mine is located within the boundary of the completed Hocker Flat Rehabilitation Site and continues to operate intermittently following completion of the Hocker Flat Project. Additionally, there are at least 36 named mining claims along the Trinity River on public lands managed by BLM. Currently, BLM has no authorized operating plans for mines along this reach of the Trinity River. There are no current mining operations in the Upper Junction City Rehabilitation Site. However, there are two active claims at the Lower Steiner Flat Rehabilitation Site. These claims have been located on lands withdrawn for powersite purposes, hence the claims are subject to BLM review under Public Law 359- Mining in Powersite Withdrawals Act of 1955. BLM has determined that placer mining operations on these claims would substantially interfere with the restoration project and that mining operations should not be allowed within the boundaries of the restoration project. In addition, certain recreational mineral specimen collecting activities (43 CFR 8365.1-5), such as sluicing, should not be allowed in portions of the restoration site. Therefore the project would have

potentially significant impacts on the potential development of mineral resources at that site. This would be a significant impact.

The project could adversely affect mineral claimants or recreational miners by reducing potential flexibility for mining exploration and development. Future consequences to mineral claimants or recreational miners could entail increased reclamation costs, decreased land available for mining or dredging, reduced flexibility in developing exploration and mine plans, and diminished access to mineral claims. Project construction activities associated with the Proposed Project that occur in the river could temporarily or permanently preclude individuals from accessing and actively working their mining claims. Because activities at the Lower Steiner Flat site would occur in two phases the potential disruption to mining would be extended.

The TRRP and BLM would also work closely with the mining community to address concerns related to mining once the project is completed. Mineral claimants that may be affected by the restoration efforts would be contacted to discuss future mining plans and options to reduce Project impacts to these plans.

Though the mining claims at Lower Steiner Flat fall within a powersite, the improvement of fish and wildlife habitat falls within the parameters of a federal agency's authority to manage "other surface resources" on unpatented mining claims granted by the Surface Resources Act, 30 U.S.C. § 612(b) (1994). Two Interior Board of Land Appeals (IBLA) decisions are referenced that support this authority. IBLA 87-340, July 13, 1989 states that the locator of an unpatented mining claim subject to the Act may not interfere with the right of the United States to manage the vegetative and other surface resources of the land, or prevent agents of the federal government from crossing the locator's claim in order to reach adjacent land for purposes of managing wild-game habitat or improving fishing streams so as to thwart the public harvest and proper management of fish and game resources on the public lands generally, both on located and on adjacent lands. IBLA 92-531 and 92-532, October 7, 1997, states that an agency's right to manage the surface resources on unpatented mining claims is not confined to simply preserving those resources as they exist, but also embraces enhancing those resources. Accordingly, fish habitat enhancement techniques fall within an agency's authority to manage "other surface resources" on unpatented mining claims.

#### MITIGATION MEASURES

Implementation of the project could interfere with existing, proposed, or potential development of mineral resources. Therefore, mitigation measures 4.3-3a, 4.3-3b, and 4.3-3c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant. Mining will not be allowed on the claims within the area of the project boundaries.

## 3.4 Water Resources

This section presents a discussion of the water resources known to occur in the Trinity River Basin in proximity to the Proposed Project sites. It evaluates potential impacts to water resources from implementation of the Proposed Project. Additional information about the affected environment for water resources is addressed in the Trinity River Master EIR (Section 4.4).

## 3.4.1 Affected Environment/Environmental Setting

### 3.4.1.1 Surface Water Hydrology

The Trinity River Basin encompasses approximately 2,965 square miles, about one-quarter of which is upstream of the TRD. Since 1960, the TRD has been the major determinant of the hydrologic conditions affecting the mainstem Trinity River, particularly in the 40-mile reach downstream of Lewiston Dam. Figure 1 shows the locations of the proposed rehabilitation sites along the Trinity River.

Prior to authorization of the 2000 ROD for the Trinity River Mainstem Fishery Restoration EIS, the average annual flow volumes released from the TRD into the Trinity River at Lewiston Dam were reduced from pre-dam conditions by as much as 90 percent. Consequently, channel form and function in this reach have been substantially altered. From 1962 to 1979, CVP diversions delivered nearly 90 percent of the water from the TRD to the Sacramento River for urban and agricultural use[2]. After 1979, river releases were increased from 110,000 to 340,000 afa, substantially increasing the available flow to the Trinity River during the period between 1979 and 2002 (ROD flows). Although the 2000 ROD for the Trinity River FEIS/EIR established an annual volume based on water year types, litigation in federal court prevented implementation of the flow releases specified in the ROD in 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 revised each year based on water year type.

### 3.4.1.2 Groundwater

Most usable groundwater in the mountainous Trinity River Basin occurs in widely scattered alluvium-filled valleys, such as those immediately adjacent to the Trinity River. These valleys contain only small quantities of recoverable groundwater and are therefore not considered a major source. A number of shallow wells adjacent to the river provide water for domestic purposes. These infiltration wells are often located near the river and may be affected by spring ROD flow releases (i.e., up to 11,000 cfs). Consequently, the TRRP in cooperation with Trinity County has implemented the Trinity River Potable Water and Sewage Disposal System Assistance Program (Assistance Program) to allow qualifying landowners to relocate, replace, modify, or otherwise improve their potable water and sewage systems to better resist damage from ROD flows intended to benefit fisheries. The Assistance Program is a one-time only opportunity to receive financial assistance from the TRRP to ensure that ROD flows do not negatively affect existing infrastructure and site improvements (e.g., water sources and wastewater disposal systems). At the time the Trinity River Master EIR was completed, approximately 75 wells/septic systems had been improved and another 40 were planned for enhancement with TRRP funding. Additionally, there are a number of wells that are designed to be inundated, and often are, during the course of a water year.

### 3.4.1.3 Floodplain Hydrology and Hydraulics

The floodplain of the Trinity River is identified in FEMA's Flood Insurance Study, Trinity County, California, and Incorporated Areas (1996). Actual floodplain designations are contained in the accompanying Flood Insurance Rate Map (FIRM). The countywide FIRM became effective on August 16, 1988, with an update in 1996.

[2] The percentage of the Trinity River diverted to the CVP is the percentage of total reservoir release, not the percentage of the inflow.

Within the 40-mile reach of the Trinity River below Lewiston Dam, the river has adjusted to a flow and sediment regime imposed in large part by the TRD. While the degree of berm development varies within the 40-mile reach, the river channel has been simplified and the channel has narrowed over time. In general, the aquatic habitat in this reach of the river lacks complexity and is typified by a recurring sequence of pools, runs, glides, and low-slope riffle habitat. Though the annual hydrograph is influenced by accretion flow from tributaries, the main influence on river flows is the Lewiston Dam release. The closer to the dam, the greater its relative influence on river flows. In the vicinity of the dam (downstream to approximately Weaver Creek), the OHWM is equal to the normal year ROD flow release of 6,000 cfs. Downstream of Weaver Creek, or certainly past Canyon Creek (in the Proposed Project sites vicinity), winter flows have the dominant influence on the OHWM. Winter peak flows here frequently exceed spring ROD releases. The OHWM in the Canyon Creek area was estimated at 6,600 cfs (U.S. Bureau of Reclamation and the North Coast Regional Water Quality Control Board 2006). For this document, the OHWM was field verified during the wetland delineation and that value is represented on all figures. The verified OHWM was at an elevation greater than the modeled 6,600 cfs line. The timing of peak flow and ramping-down releases under the ROD corresponds to the typical annual period of peak snowmelt floods in the watershed for each of the water year classes described in the ROD. Additional information on morphologic processes and Trinity River flows is provided in Sections 4.3 and 4.4, respectively, of the Trinity River Master EIR.

The best available hydraulic analysis for the Trinity River is the Trinity River Hydraulic Flow Study: North Fork Trinity to Lewiston Dam developed by the California DWR for the TRRP using flow data from the 2005 Reclamation study (California DWR 2007). The DWR study summarizes flow modeling of the mainstem Trinity River from Lewiston Dam to its confluence with the North Fork Trinity River, 40 miles downstream. The model estimates water-surface elevations (WSEs) based on a controlled flow release of 11,000 cfs from Lewiston Reservoir with 10-year and 100-year spring tributary flows. The TRRP has defined the 11,000 cfs release plus 100-year spring tributary flow event as the MFF for project planning and risk assessment purposes. Using the well grant assistance program, the TRRP has funded the structural improvement and relocation (or otherwise addressed) problems with existing structures within the MFF inundation zone to allow this maximum ROD flow to be implemented.

## 3.4.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.4.2.1 Methodology

Hydraulic models allow the preliminary evaluation of risks to Trinity River properties by comparing the WSE of the Proposed Project sites' design conditions with the existing conditions. The comparison indicates how the features of the Proposed Project sites could affect the BFE estimated by FEMA for the 100-year flood. One of the design criteria for the Proposed Project was developed to ensure that none of the proposed activities would result in an obstruction to flow or an increase in the BFE of more than 12 inches.

### 3.4.2.2 Significance Criteria

The Proposed Project would have a significant impact related to water resources if one of the following conditions occurred:

- It could subject people, structures, or other resources to substantial changes in flood hazards; or
- It would result in modification of groundwater resources.

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

- The base floodwater surface elevation would increase by more than 1 foot;
- There would be a substantial alteration of the existing drainage pattern of a site or area, including the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; or
- It would expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

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

- There would be a long-term decline in groundwater elevations (or a net reduction in groundwater storage) due to interference with recharge;
- There would be detectable land subsidence;
- Any water quality standards or waste discharge requirements intended to protect groundwater quality would be violated; or
- There would be a 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 are not considered significant impacts.

#### 3.4.2.3 Impacts and Mitigation Measures

Table 7 summarizes the potential water resources impacts that could result from construction of the project.

**Table 4. Summary of Potential Water Resource Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.4-1. Implementation of the project could result in a temporary or permanent increase in the BFE. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.4-2. Implementation of the project could result in a permanent decline in groundwater elevations or a permanent change in groundwater quality. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.4-3. Implementation of the project would expose people or structures to a significant risk of injury, death, or loss involving flooding or erosional processes. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.4-1: Implementation of the Proposed Project could result in a temporary or permanent increase in the base floodwater elevation.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the Trinity River floodplain would not be altered and the existing BFEs would not change because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The elevation and extent of the floodplain of the Trinity River would be modified through the activities associated with the Proposed Project, as described in Chapter 2. The Proposed Project would be consistent with the overall project objectives and design criteria established by the TRRP and the Regional Water Board and the hydraulics analysis indicates that removing all the excavated material from the riverine rehabilitation areas and placing it as coarse sediment within the channel or above the BFE in upland activity areas would not result in an increase in the FEMA BFE. Therefore, the impact would be less than significant.

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-PROJECT ALTERNATIVE

Under the No-Project alternative, no effects on local groundwater levels would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The displacement of channel and floodplain materials has only a minimal potential to change the groundwater hydraulics within the boundaries established for the Proposed Project sites. 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 would occur. Therefore, this impact would be less than significant.

Impact 3.4-3: Implementation of the Proposed Project would expose people or structures to a significant risk of injury, death, or loss involving flooding or erosional processes.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no people or structures would be exposed to additional flood risks because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The Proposed Project would not result in activities intended to increase the BFE at the rehabilitation sites. Activities intended to modify the bed and banks of the Trinity River could have ancillary impacts to the bed and banks downstream. To date, the TRRP staff has identified several locations downstream of activity areas where the bank of the river appears to be responding to post-ROD changes in the flow and sediment regime.

While the fundamental objective of the activities associated with the Proposed Project is to reestablish the alluvial features of the river, isolated instances of bank erosion may result in the loss

of river bank and associated vegetation or, to a lesser extent, constructed features such as wells, utilities, and landscape features. In addition to the Assistance Program for water and sewer, bank stabilization measures, specifically the bio-engineering measures described in Appendix A, are intended to address these impacts on a case-by-case basis, consistent with all federal, state, and local requirements. In concert with the ongoing TRRP and the activities described in Chapter 2 and Appendix A, the Proposed Project is designed to avoid exposing people or structures to a significant risk of injury, death, or loss involving flooding. Therefore, this impact would be less than significant.

## 3.5 Water Quality

This section describes water quality conditions in the vicinity of the Proposed Project sites along the Trinity River. It also evaluates potential impacts to water quality from implementation of the Proposed Project. The principal components of the TRD are Lewiston Dam, Trinity Dam, and the facilities that divert runoff from the Trinity River watershed to the Sacramento River Basin. Prior to full implementation of the ROD, up to 90 percent of the natural Trinity River flow was diverted, which substantially altered water quality in the Trinity River, particularly its temperature and sediment regimes. Additional information on the affected environment as it relates to water quality is provided in the Trinity River Master EIR, Section 4.5, Water Quality. Information related to this topic is also provided in the Trinity River Master EIR in Section 4.4, Water Resources, and Section 4.6, Fisheries.

### 3.5.1 Affected Environment/Environmental Setting

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. A dramatic decrease in the abundance of Trinity River coldwater fishes has taken place since the TRD began operation (USFWS and HVT 1999). Water quality in the Trinity River may also be affected by acid mine drainage from abandoned mines and past mining activities, sediment releases from land use practices associated with unstable soils and decomposed granite (e.g., roads, vegetation management, and subdivisions), septic tanks, aboveground and underground storage tanks, and lumber mills (North Coast Regional Water Quality Control Board 2007).

The Proposed Project is subject to compliance with the Water Quality Control Plan for the North Coast Region (Basin Plan). The beneficial uses for the Trinity River defined in the Basin Plan are listed in Table 4.5-1 of the Trinity River Master EIR. In addition to municipal and domestic water supply, the beneficial uses affected by the water quality of 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 and temperature). The Basin Plan identifies both numeric and narrative water quality objectives for the Trinity River. Table 4.5-2 in the Trinity River Master EIR summarizes the water quality objectives for each of the categories that have been established by the Regional Water Board to protect designated beneficial uses.

#### Temperature

The influence of Trinity Lake and Lewiston Reservoir on downstream conditions diminishes with distance. In general, the greater the release volumes from Lewiston Dam, 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.

### Sediment

In 1992, the Environmental Protection Agency (EPA) added the Trinity River to its list of impaired rivers under the provisions of Section 303(d) of the Clean Water Act (CWA) in response to a determination by the State of California that the water quality standards for the river were not being met due to excessive sediment. In 2001, the EPA established a Total Maximum Daily Load for sediment in the river. The Regional Water Board has continued to identify the Trinity River as impaired in subsequent listing cycles. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to degradation of habitat for anadromous salmonids. The restriction of streamflows downstream of the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (EPA 2001). With implementation of ROD flows and placement of coarse sediment in the Lewiston area, local reductions in fine sediment in the river bed have been observed and fish spawning has increased. Recent measurements to compare in-channel fine sediment concentrations pre- and post-ROD flows have indicated that gravel quality and river bed oxygen permeability have increased through the 40-mile reach. The percent fines measured in Trinity River samples at 2001 sites revisited in 2010, was measurably less than found in 2001 (Graham Matthews and Associates 2010).

Local fishermen (e.g., the TRGA) have recently expressed concern that TRRP addition of gravel to the river has resulted in the filling, or partial filling of fishing holes (adult holding habitat) with gravel. In high flow gravel augmentation areas, primarily Sawmill and Lowden locations, holes have decreased in depth. Furthermore, due to high fishery flows released in spring 2011 (11,000 cfs from Lewiston Dam), riverbed and floodplain gravel have also moved more than in earlier years. While increased erosion and gravel movement during high flow years is to be expected, the TRRP is now processing data, collected pre- and post-high flows, to determine the extent and type of change that has occurred on the river's bottom. Pre- and post-flow data on river bathymetry will be evaluated and reported in 2012. The results, in combination with Phase I reporting, will assist the TRRP in determining how to proceed with future gravel augmentation at rehabilitation sites and during high flow augmentation efforts. During 2012 high flow releases from Lewiston Dam, no coarse sediment (gravel) will be added and no addition of mobile gravel (<6 inch diameter) is included in the Proposed Project.

### Turbidity

The Basin Plan (North Coast Regional Water Quality Control Board 2007) contains water quality objectives to protect present and probable future beneficial uses of water and to protect existing high quality waters of the state. Water quality objectives form the basis for establishment of waste discharge permits. The Basin Plan contains a water quality objective for turbidity that applies to the Trinity River, including the Proposed Project sites. The water quality objective for turbidity states, "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 issuance of discharge permits or waiver thereof." An allowable zone of turbidity dilution is an area within water where turbidity discharges may increase the naturally occurring turbidity level by more than 20 percent. An allowable zone of

turbidity dilution may only be granted in waste discharge permits if all beneficial uses (identified in Table 4.5-1 of the Trinity River Master EIR) remain protected.

The turbidity level in a water body is related to the concentration of suspended solids, which are predominantly less than 0.5 millimeter (mm) in diameter. Water clarity has historically been measured as the concentration of suspended solids (mg/L) or more recently as turbidity, which is measured in NTUs. Turbidity generally does not cause acute adverse affects to aquatic organisms unless concentrations are extremely high (Lloyd 1985). Noggle (1978) estimated an acute lethal concentration causing 50 percent mortality of juvenile coho salmon at 1,200 mg per liter (mg/L) during summer (approximately 900 NTU). At relatively 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 (e.g., ability to feed) or indirectly (e.g., impact to food supply or spawning substrate) (Alabaster and Lloyd 1980). However, at lower levels, effects of turbidity last as long as the perturbation in clarity and are limited to reducing reactive distance to prey as well as predation risk. For instance, if periods of increased turbidity occur during periods of merganser (fish predator) activity, the turbidity would probably be used as protective cover that would provide an overall benefit to the fish (North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation 2009). In the lab, benthic feeding success of coho salmon in water with turbidity levels as high as 100 NTU has been found to be at least 70 percent of their feeding success in clear water (Harvey and White 2008). During low flow restoration activities, adult salmon have been observed using the more turbid sections of the river (10 to 15 NTU) as protective cover during their spawning migrations through the project areas (Gutermuth, pers. obs.). Finally, the Alaska Department of Environmental Conservation (2008) has determined that turbidity levels for protection of aquaculture in flowing conditions may not exceed 25 NTUs above natural conditions, and that this level is protective of fishery resources.

The Trinity River is typically very clear with natural background turbidity levels in the range of 0 to 1 NTU during summer low flow conditions. Due to the very low background concentrations during the summer, turbidity levels immediately downstream of the most carefully planned and implemented in-channel restoration activities will likely be increased by more than 20 percent above background levels, and plumes extending downstream of restoration activities may be visible. However, short-term increases in turbidity levels that occur during permitted restoration activities are generally not considered to be biologically detrimental to aquatic organisms; they are short in duration and fish are able to move away from the activity area. Reduction of these turbidity levels to within 20 percent above background is very expensive if not impossible using BMPs. Monitoring turbidity increases during implementation of previous Trinity River restoration projects has shown that periods of increased turbidity are brief (generally less than 24 hours); turbidity levels have not exceeded 50 NTU at monitoring points located 500 feet downstream and beneficial uses were still protected. In addition, the quantity of fine sediment introduced to the river during low flow restoration activities is typically small.

In contrast, sediment particles between 0.5 mm and 8.0 mm in diameter tend to settle more quickly. These larger sediment particles can decrease the permeability of the channel bed and cover spawning sites, causing negative impacts on the aquatic community (USFWS and HVT 1999). However, so long as the larger sediment particles are only mobilized into the water column from

completed restoration activity areas and off-site sources during high flows, the larger sediment particles will be transported far down-river or deposited on adjacent alluvial features (e.g., floodplains) where these particles contribute to riparian form and function (e.g., plant growth).

Post construction monitoring data from the Indian Creek site and the Canyon Creek suite of sites indicate that downstream turbidity levels may be increased by overland flow during the initial high flow events that occur following completion of construction activities. During high flow spring-time releases from Lewiston Dam (e.g., clear water released from the dam during ROD flows), turbidity levels may be increased by more than 20 percent at monitoring locations 500 feet or more downstream of recently completed channel rehabilitation sites. However, when the high flows are caused by natural storm water runoff in the Trinity River basin, and the river is already carrying a substantial sediment load (e.g., turbidity greater than 40 NTUs), background levels are generally not increased by more than 20 percent at monitoring locations downstream of recently completed activities. Furthermore, during natural high flow events the relative addition of fine sediment from recently completed channel rehabilitation sites is minimal compared to the sediment load already being transported by the river (Gutermuth, pers. obs.). In both of these high flow scenarios, impacts to the Trinity River from the addition of TRRP related fine sediment is minimal because the materials that increase turbidity levels are maintained in suspension and transported downriver or deposited on the floodplain in the same manner as fine sediment from other sources. In both low flow and high flow scenarios, as long as project related turbidity level increases are limited in concentration and duration, impacts to aquatic life and beneficial uses are expected to be minimal in comparison to the long-term aquatic habitat benefits that these projects are designed to create.

#### Mercury

Another source of potential water quality impairment of the Trinity River is mercury. Although the river is not listed under Section 303(d) of the CWA for mercury impairment, elevated concentrations have been found in water, sediment, and biota (i.e., fish, frogs, and predatory aquatic insects) in the upper Trinity River Basin upstream of Lewiston Dam (USGS, unpublished data). The general significance of mercury as a biological toxin and the likely sources of mercury in regional and local contexts are discussed in Section 4.13, Hazards and Hazardous Materials, of the Trinity River Master EIR.

Early in the planning phases for the mechanical channel rehabilitation projects along the Trinity River, the TRRP recognized the possibility that mercury in placer tailings and/or fluvial fine sediments could be disturbed and mobilized by the rehabilitation activities. U.S. Geological Survey (USGS) monitoring suggests that the alluvial materials that are subject to project-related disturbance contain levels of mercury well below the numeric criteria promulgated by the EPA for priority toxic pollutants. Overall, the USGS's assessment of site-specific methylation data suggests that the bioavailability of mercury in the Trinity River and its floodplain is not presently high and would not likely be modified by the Proposed Project.

## 3.5.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.5.2.1 Methodology

For the past six years, the TRRP has implemented a number of channel rehabilitation projects and completed similar activities to those proposed at the Proposed Project sites. While the type and intensity of these activities vary, the effects of the activities on water quality in the Trinity River are

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

#### 3.5.2.2 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;
- Substantial degradation of water quality, such that existing beneficial uses are precluded specifically because of degraded 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; or
- Violation of site-specific temperature objectives for the Trinity River contained in the Basin Plan (North Coast Regional Water Quality Control Board 2007).

#### 3.5.2.3 Impacts and Mitigation Measures

Table 8 summarizes the potential water quality impacts resulting from construction and operation of the project.

**Table 5. Summary of Potential Water Quality Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| 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 | Significant | 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 | Significant | Less than significant |
| Impact 3.5-3. Construction of the project could cause contamination of the Trinity River from hazardous materials spills. | | |
| No Impact | Significant | Less than significant |
| Impact 3.5-4. Construction of the project could result in increased stormwater runoff and subsequent potential for erosion. | | |
| No impact | Less than significant | Not applicable[1] |
| 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 | Significant | Less than significant |

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

Impact 3.5-1: Construction of the proposed project could result in short-term, temporary increases in turbidity and total suspended solids levels during construction.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related short-term increases in turbidity or total suspended solids levels would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, the activities described in Chapter 2 would temporarily increase turbidity and total suspended solids in the Trinity River. The incorporation of design elements and construction criteria described in Appendix A (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit the total addition of fine suspended sediment to the Trinity River. Additionally, river's edge and in-channel construction activities would be staged to minimize the potential turbidity effects. During in-channel construction activities, increases in turbidity levels could occur because of excavation of alluvial material. Connection of isolated and newly constructed side channels with the mainstem (e.g., the first flush of flowing water) would result in short-term increases in turbidity levels as this material is removed from and/or redistributed within the channel. 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 size and mobility of the substrate. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of construction zones, while larger-sized sediments like coarse sands and gravels tend to drop out of the water column within several feet of the construction zone. Collectively, the activities included in the Proposed Project 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. Because activities at the Lower Steiner Flat site would occur in two phases there would be two distinct periods when short-term increases in turbidity and suspended solids concentrations could occur, one in 2012 and one when Phase B is implemented. Short-term increases in turbidity and suspended solids levels during construction would be a significant impact.

#### MITIGATION MEASURES

Construction of the Proposed Project could result in short-term, temporary increases in turbidity and total suspended solids levels during construction. Therefore, mitigation measures 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, and 4.5-1e described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.5-2: Construction of the proposed project could result in short-term, temporary increases in turbidity and total suspended solids levels following construction.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no short-term increases in turbidity or total suspended solids levels would occur following construction because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Riverine activities associated with the Proposed Project, described in Chapter 2, emphasize excavation of anabranches or low flow side channels; retention of high flow side channels; excavation of alcoves; berm and vegetation removal; in-channel fill as point bars; and incorporation of hydraulic structures, mature alder cover, and large wood at the Lower Steiner Flat Rehabilitation Site; and excavating off-channel rearing ponds; developing split flows; lowering terraces and planting vegetation; dissecting riparian fringes and connecting to floodplain swales; and incorporation of large wood at the Upper Junction City Rehabilitation Site.

The character and location of alluvial features associated with the Trinity River were modified by the construction and operation of the TRD in response to changes in the flow and sediment regimes, particularly the loss of scouring associated with peak flows. Modification or reconstruction of these alluvial features at strategic locations would promote the river processes necessary for the restoration and maintenance of Trinity River alternate bars, thereby enhancing salmonid rearing habitat. These activities would also increase the habitat available for salmonid rearing under various flows.

Implementing the Proposed Project would increase turbidity and total suspended solids in the river and fluvial surfaces following construction. Because activities at the Lower Steiner Flat site would occur in two phases there is the potential for these impacts to occur at two distinct times, one in 2012 and one when Phase B is implemented. Following construction, increases in turbidity levels would occur when newly disturbed areas are exposed to elevated river stages during high river flows. 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 unlikely to mobilize fine sediments because the precipitation would be absorbed. If fine sediments are mobilized by flow over newly disturbed areas, they could be carried several thousand feet downstream of the activity areas, while larger sized sediments, such as sands and gravels, would tend to drop out of the water column within several feet of the activity areas.

Post-construction exposure of sediments to rainfall and/or flows would 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.

#### MITIGATION MEASURES

Construction of the Proposed Project could result in short-term, temporary increases in turbidity and total suspended solids levels following construction. Therefore, mitigation measures 4.5-2a, 4.5-2b, and 4.5-2c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.5-3: Construction of the proposed project could cause contamination of the Trinity River from hazardous materials spills.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related contamination of the Trinity River from spills of hazardous materials would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction staging activities could result in a spill of hazardous materials (e.g., oil, grease, gasoline, and solvents) into the Trinity River. In addition, operation of construction equipment in or adjacent to the river would increase the risk of a spill of hazardous materials into the river (e.g., from leaking of fluids from construction equipment). At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. Spills of hazardous materials into or adjacent to the Trinity River could degrade water quality and have deleterious effects on salmonids of any life stage that are in close proximity to construction activities. Section 3.12, Hazards and Hazardous Materials, evaluates potential effects associated with exposing the public to hazards associated with the transportation and use of hazardous materials at the rehabilitation site. Additional requirements outlined in Appendix A would be incorporated into the project descriptions to reduce the potential impact. However, construction activities could result in a spill of hazardous material, which would be a significant impact.

#### MITIGATION MEASURES

Construction of the Proposed Project could cause contamination of the Trinity River from hazardous materials spills. Therefore, mitigation measures 4.5-3a, 4.5-3b, and 4.5-3c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of these mitigation measures would reduce the impacts to less than significant.

Impact 3.5-4: Construction and maintenance of the proposed project could result in increased stormwater runoff and subsequent potential for erosion.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no increases in stormwater runoff and the potential for subsequent erosion because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Implementation of the Proposed Project, including those measures described in Appendix A, would not result in an increase in impervious surface areas (e.g., structures and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion. Grading activities, including the use of rippers during grading activities, are expected to eliminate surface runoff during the first year after construction. Access routes would be located on gentle terrain and would require minimal grading. The impact associated with runoff and erosion would, therefore, be less than significant.

Impact 3.5-5: Construction and maintenance of the proposed project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no degradation of Trinity River beneficial uses would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, 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.

Although the design elements and construction methods described in Appendix A are intended to minimize these impacts, the activities associated with construction, particularly in riverine and in-channel activity areas, would result in significant impacts.

#### MITIGATION MEASURES

Construction and maintenance of the Proposed Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. Therefore, mitigation measures identified above for Impacts 3.5-1, 3.5-2, and 3.5-3 and described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

## 3.6 Fishery Resources

This section describes the fishery resources and aquatic habitats that are known to occur within the boundaries of the sites and evaluates the impacts of the Proposed Project on these resources. The Trinity River Flow Evaluation Report (USFWS and HVT 1999) determined that lack of spawning and rearing habitat for juvenile salmonids is likely a primary factor in limiting the recovery of salmonid populations in the Trinity River. Activities at the Proposed Project sites are specifically designed to increase the abundance of habitat for Trinity River salmonids by reconnecting the river with its floodplain, increasing channel sinuosity, and providing shallow low velocity habitats in close proximity to the river's edge. The discussion of fisheries resources is based on a focused literature review, informal consultation with resource agencies, and observations made during site visits. These resources are discussed in the Trinity River Master EIR (Section 4.6 and Appendix G). The Magnuson-Stevens Fishery Conservation and Management Act (MSA) and Essential Fish Habitat (EFH) are also described in the Master EIR (Section 4.6).

### 3.6.1 Affected Environment/Environmental Setting

#### 3.6.1.1 Native Anadromous Fish Species

The native anadromous species of interest in the mainstem Trinity River and its tributaries are chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss irideus*) and Pacific lamprey (*Entosphenus tridentatus*). 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 and other species and their distinct spawning populations are described in Appendix G of the Trinity River Master EIR.

### 3.6.1.2 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*), Pacific lamprey, Klamath River lamprey (*Lampetra similis*), 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 Trinity River prior to the TRD and are presumably adapted to those conditions.

Non-native fish species found in the Trinity and Klamath River Basins include American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS, unpublished data). American shad 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 Trinity River Salmon and Steelhead Hatchery until 1977, when this practice was discontinued because of 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.

### 3.6.1.3 Special-Status Species

Special-status fish species with the potential to occur at rehabilitation sites in the Trinity River are discussed in the Trinity River Master EIR (Section 4.6 and Appendix G) and are summarized below.

#### COHO SALMON

The Southern Oregon/Northern California Coasts (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon was listed as threatened pursuant to the federal ESA on April 25, 1997. This listing includes coho salmon from the Trinity River and Klamath River Basins. Critical habitat for the SONCC ESU coho salmon was designated on May 5, 1999; in the Trinity River Basin, designated critical habitat for this species 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 EIS (NMFS 2000) 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."*

Both Reclamation's 2000 Biological Assessment and NMFS' subsequent 2000 Biological Opinion acknowledged that construction at channel rehabilitation projects would not occur "within the wetted channel." However, in-channel work would occur related to proposed activities at the Proposed Project sites. After considerable restoration planning and design work by TRRP staff, NMFS with support from the TMC now considers in-channel work a necessary component to successfully carry out and achieve program goals and objectives as detailed in the ROD. The TRRP concluded that reinitiation of formal consultation under Section 7 of the ESA was not warranted because effects to SONCC coho salmon were consistent with and not likely to rise above those that

were considered in the original 2000 Biological Opinion. In May 2006, NMFS concurred that reinitiation of formal consultation was not warranted if bank rehabilitation activities were authorized within the wetted channel (NMFS 2006).

#### STEELHEAD

The KMP ESU of steelhead, which includes stocks from the Trinity River, was proposed for federal 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 NMFS). 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). The summer-run population segment of this ESU remains a California Species of Special Concern, as well as a USFS sensitive species (Moyle et al. 1995; USFWS 1995).

#### CHINOOK

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 et al. 1995).

#### PACIFIC LAMPREY

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). BLM lists the Pacific lamprey as a sensitive species.

#### LOCAL AQUATIC HABITAT

The aquatic environment in the general vicinity of the Proposed Project is characterized by a sequence of aquatic mesohabitat types. Each of these habitat types consists of distinctive combinations of depth, water velocity, water temperature, cover, substrate composition (bedrock, cobble, gravel, sand, silt, etc.), and adjacent riparian vegetation. Figures 9, 10, and 11 illustrate aquatic mesohabitat as qualitatively defined by the USFWS in a 2002 survey.

In general, moderate slope (near riffle) and low slope (glide) areas equate to faster reaches than deep pools, and runs, which are intermediate in depth. A low slope area may alternatively be named a glide and moderate slope areas (near riffle) often include aerated waters. 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 EFH for both coho and chinook salmon. Juvenile coho are expected to utilize suitable habitats in the 40-mile reach of the mainstem Trinity River below Lewiston Dam year-round (North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation 2009). Pool habitat associated with boulders and LWD is particularly preferred by rearing coho salmon (Hassler 1987; Sandercock 1991; Moyle 2002).

In 2003, a radio-telemetry study of migration and behavioral thermoregulation of adult spring-run chinook salmon was conducted in the upper Trinity River (Marine and Lyons 2004). Tagged fish used available run and glide habitats that were typically large (surface area) and offered depths up to 4 feet. These habitats held fish for longer periods than other portions of the study reach.

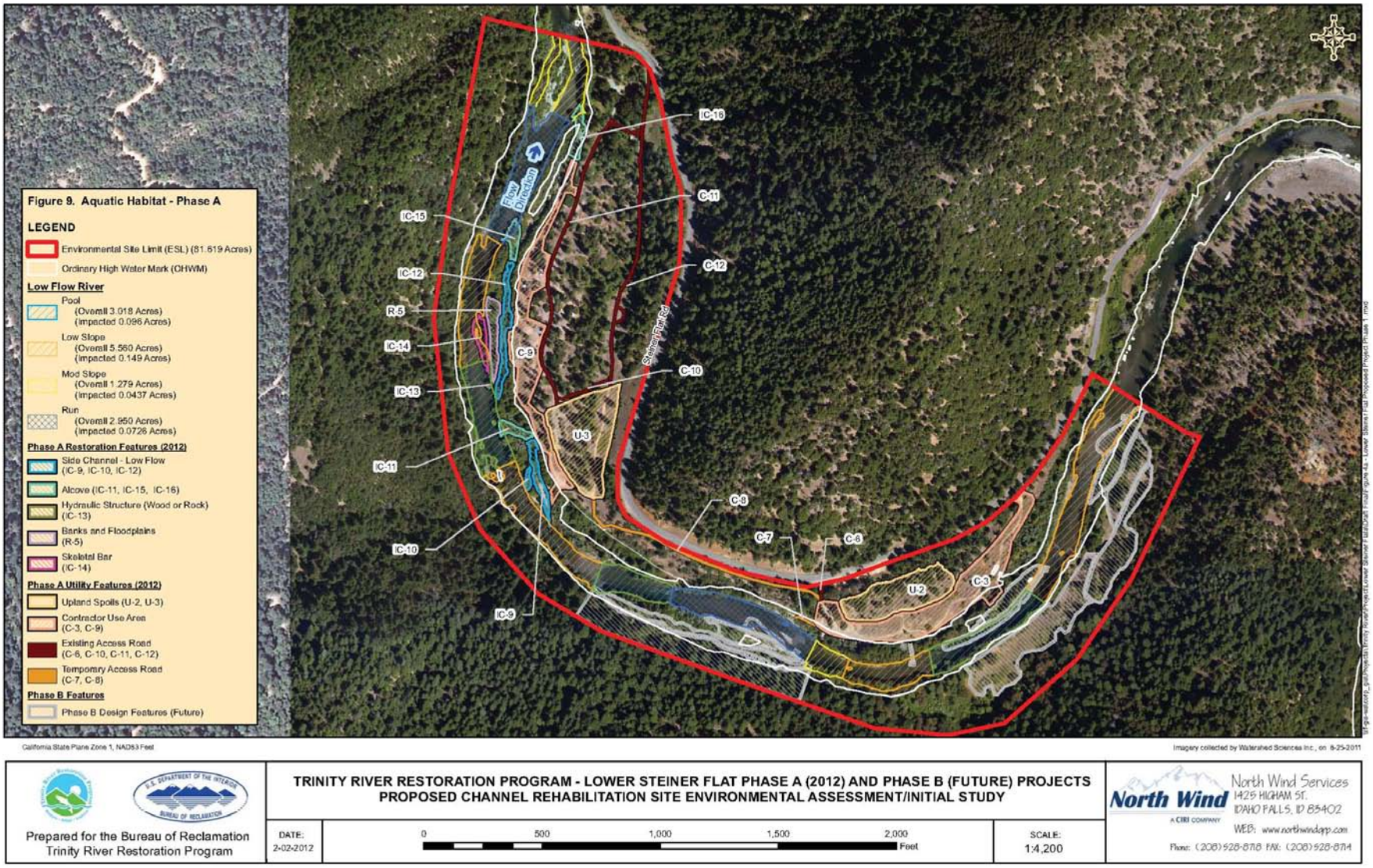


**Figure 3. Aquatic Habitat and Potential Project Impacts at the Lower Steiner Flat Rehabilitation Site, Phase A.**

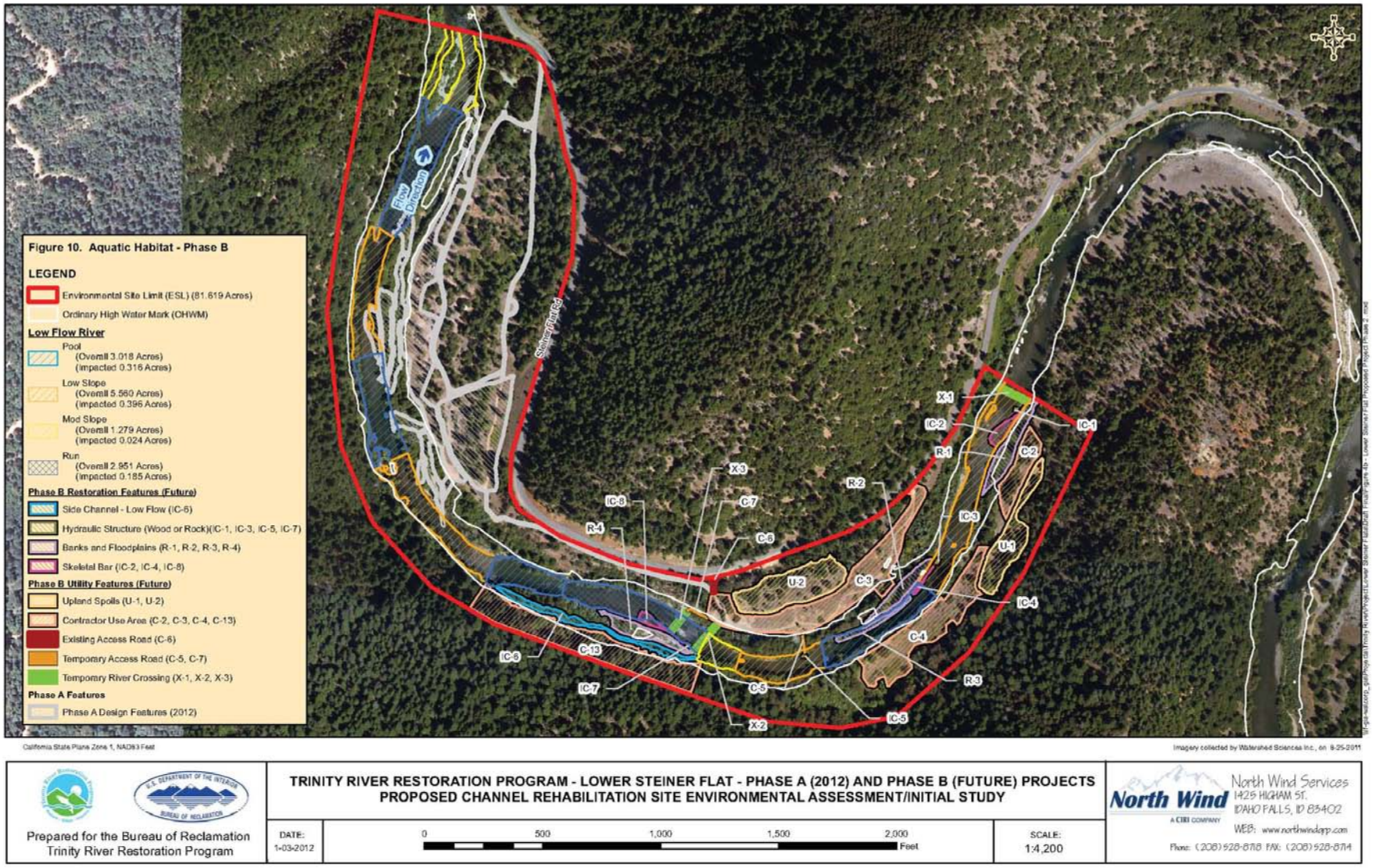


**Figure 4. Aquatic Habitat and Potential Project Impacts at the Lower Steiner Flat Rehabilitation Site, Phase B.**

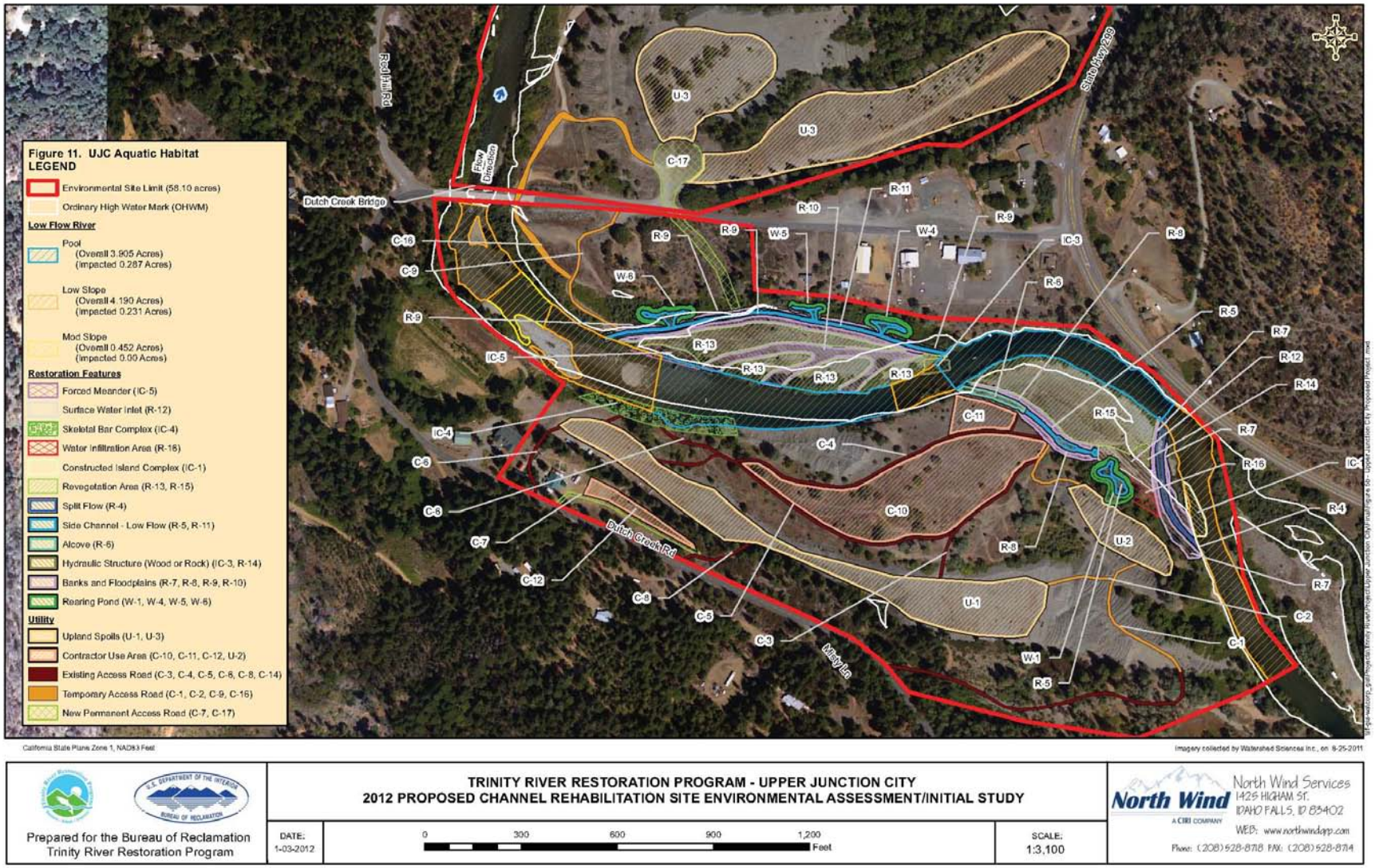


**Figure 5. Aquatic Habitat and Potential Project Impacts at the Upper Junction City Rehabilitation Site.**

Adult summer/fall-run steelhead migrate to, and hold in, the deeper pools, runs, and glides along the river between April and January (Leidy and Leidy 1984; Moyle 2002). These fish are active throughout the salmon spawning season, and migrate to the upper-most river reaches and into tributaries to spawn from February through April. Winter-run steelhead 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 riffles throughout the river. Suitable juvenile steelhead rearing habitat also occurs in the river. Fry and juvenile steelhead of both runs may be expected in the riffles and run/pool habitats year-round, especially those associated with abundant SRA and large cobble/boulder habitat, including LWD (Hampton 1988; Moyle 2002).

The Lower Steiner Flat reach is located downstream of several major tributaries, including Weaver, Indian, and Reading creeks. These tributaries provide water and sediment to the mainstem year-round, but especially during winter floods. Flows in this reach are measured by the USGS stream gage at Douglas City (#11525854). According to the channel design guide (HVT et al. 2010), the representative summer baseflow for the Douglas City Reach (based on data from water year 2000 to 2009) is 479 cfs, of which 450 cfs is released from Lewiston Dam and 29 cfs is from tributary inflow. The winter baseflow in the reach varies from 450 cfs (dry year) to 950 cfs (extremely wet year), and averages 520 cfs during a "normal" year. The estimated spring flows at the reach, including ROD releases from Lewiston Dam, range from 4,723 cfs (including 4,500 cfs from Lewiston Dam) in a dry year, to 6,215 cfs (6,000 cfs from the dam) in a "normal" year, to 11,935 cfs (11,000 cfs from the dam) in an "extremely wet year." The reach contains riffles, pools, and some alternating bars typical of meandering rivers, but the river is not freely meandering (CH2MHill 2011).

The bed material within the active channel at the Lower Steiner Flat reach is coarse gravel. No pebble count data are available for this reach itself; however, surface and subsurface particle size distributions have been collected at Steiner Flat (RM 91.95), less than 1 mile upstream of the project reach. The channel design guide (HVT et al. 2010) used these data to estimate the reach-average grain size for the bed surface and the subsurface. The surface D50 and D95 for the Douglas City Reach (RM 95.5 to 88.0), which includes the Lower Steiner Flat reach, are 73 mm and 147 mm, respectively. The bed is armored as would be expected. Sediment mobility analyses of the proposed design show that very coarse gravel (32 to 64 mm) would be close to the threshold of motion throughout the main channel in most of the reach at the annual high flow for a normal water year (6,215 cfs). Some confined portions of the reach would also mobilize small cobbles (64 to 128 mm), close to the coarser grain sizes in the armor layer. There are two deep pools on the outside of the bends, and point bars on the inside of the bends. This characteristic of the reach is partially responsible for creation of some of the best existing habitat areas (CH2MHill 2011).

Suitable spawning habitat for anadromous salmonids occurs in most riffles, particularly in low-slope riffles and tail-outs of pools and deep run/glide habitats. Salmon spawning surveys in the upper Trinity River conducted annually by the CDFG (in cooperation with the YT, USFWS, and USFS) report that the greatest concentration of chinook and coho salmon spawning occurs in the upper survey sections, which range from Lewiston Dam to Old Lewiston Bridge and Old Lewiston Bridge to Bucktail Bridge. Chinook salmon and steelhead trout use the Lower Steiner Flat reach year-round for rearing, spawning, and winter cover. Juvenile fish snorkeling data are not available for the project area boundaries, but the USFWS has collected adult spawning data. Based on redd

counts from 2009, steelhead and chinook spawning is focused in several locations through the reach (CH2MHill 2011).

The Upper Junction City Rehabilitation Site includes two subtle crossing riffles in the upper half of the site, pool habitat along the right bank of the more upstream bend, and a large bar complex in the downstream third of the site. This bar complex is formed from gravel recruited off the eroding tailings pile on river left, and in 2010 created a backwater that, at baseflow, extended as far as the most upstream riffle crossing. The 2011 spring high-flow release from Lewiston Dam, which peaked at over 12,000 cfs at the site, caused considerable additional erosion along the full length of that tailings pile, as well as along the left stream bank for a distance of about 200 feet downstream from the tailings. It is anticipated that the downstream bar complex may have increased in size as a result of this additional gravel recruitment. The extreme upstream end of the site is occupied by a long (> 700 feet) riffle. The overall slope of the site is 0.0024, which is a typical slope over the 40-mile project area. However, the drop is concentrated on the long riffle at the far upstream end of the site and on the slip face of the bar complex at the far downstream end of the site. The slope through the backwatered center of the site is nearly flat (USFWS and USBR 2011).

Current pool-riffle spacing through the upstream 2/3 of the reach is about 1,000 feet, or about 12 channel widths. This is a relatively large value, and suggests that it may be appropriate to promote the development of additional alternate features. By contrast, riffle and pool spacing in the complex bar area in the downstream third of the site is about 500 feet. Preliminary regime analysis indicates that the bankfull channel should average around 150 feet in width. This suggests that the channel is overly confined in the upstream half of the site, but is near an appropriate width in the downstream half (USFWS and USBR 2011).

Substrate conditions are variable through the Upper Junction City reach. Bed surface concentrations of sand (40-100% cover) are located in eddies on the convex banks in curves. Elsewhere, surface sand cover varies from near zero in the upstream quarter of the site to 20-30% in the backwater upstream from the bar complex. Surface gravel sizes tend to be finer (D50 = 40-100 mm) in the upstream half of the site and on the slip face of the bar complex than in the central part of the site (D50 = 75-200 mm). The primary local upstream source of sediment to the site is Oregon Gulch, which appears to deliver large quantities of fine sediment and moderate quantities of gravel (USFWS and USBR 2011).

Some areas of the Upper Junction City Rehabilitation Site provide spawning and rearing habitat for coho, chinook, and steelhead. Mainstem redd construction in this portion of the river is generally dominated by natural origin chinook salmon as hatchery origin chinook and coho salmon spawners generally construct redds much closer to Lewiston Hatchery. Most of the spawning activity within the Upper Junction City Rehabilitation Site boundaries occurs on the downstream bar complex. While the remainder of the site experiences relatively low spawning density, higher densities are observed immediately upstream and for about 1 km upstream to Oregon Gulch. Deep adult salmon holding habitat currently occurs opposite features R-5 to R-7 (USFWS and USBR 2011).

No in-channel work or disturbance along the river bank would occur within the Lower Junction City Rehabilitation Site boundary as a result of contractor use of the U-3 spoil area. Because there would be no potential impacts to aquatic habitat including SRA those resources are not described.

#### 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 document, specifically Section 3.3, Geology, Fluvial Geomorphology, and Soils; Section 3.4, Water Resources; and Section 3.5, Water Quality, as well as in the respective sections of the Trinity River Master EIR. The relationship between these factors and fish is summarized in the following paragraphs.

The TRD blocked access to 59 miles of chinook salmon habitat, 109 miles of steelhead habitat, and an undetermined amount of coho salmon habitat (USFWS 1994). Much of this habitat is thought to have been prime spawning and rearing habitat. In the case of 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 (USFWS 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 the 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 (USFWS 1994).

The altered patterns of fluvial geomorphic processes in the upper Trinity River have resulted in a reduction in the number of alternate gravel bar sequences with a resultant change in substrate quality and a loss of important salmonid habitats associated with the alternate bars (e.g., pools, riffles, open gravel/cobble bars, and slack-water habitats). Additionally, functional side-channel habitat has also been affected by modifications to alluvial deposits.

Changes in substrate composition occur in conjunction with upland and riverine processes. The construction and operation of the TRD have modified the sediment regime of the mainstem Trinity River, particularly the 40-mile reach below Lewiston Dam. 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. In comparison to pre-TRD conditions, water temperatures below Lewiston Dam today are cooler in the summer and warmer in the winter.

#### HABITAT RESTORATION PROJECTS

Since the early 1980s, the Trinity River Basin Fish and Wildlife Restoration Program have conducted a variety of restoration activities in the mainstem Trinity River and its tributaries.

Restoration activities in the mainstem Trinity River have included coarse sediment (spawning gravel) supplementation, pool dredging to remove fine sediment and restore valuable holding habitat and construction of several channel rehabilitation projects (side channels and bank rehabilitation of point bars).

From 1990 through 1993, the Trinity River Basin Fish and Wildlife Restoration Program constructed 29 channel rehabilitation projects on the mainstem Trinity River between Lewiston Dam and the North Fork Trinity River, 20 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 (North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation 2009; USFWS, unpublished data). 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" (USFWS and HVT 1999).

## 3.6.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.6.2.1 Methodology

The analytic methods used to assess potential impacts of the Proposed Project on fisheries resources included a comprehensive literature search and focused field surveys. Evaluation of the presence of special-status fish species and sensitive habitats within the boundaries of the site was conducted by performing a database search of the California Natural Diversity Database (CNDDB), informally consulting with resource agencies (e.g., CDFG, NMFS, and USFWS), and reviewing environmental documents and technical studies prepared for projects in the vicinity. Aquatic habitat within the 40-mile reach below Lewiston Dam was identified and characterized based on the USFWS mesohabitat delineations map, reconnaissance-level site visits, consultation with local fishery biologists, and review of pertinent literature and data. These efforts were conducted to provide an overview of the quality and character of potential suitable spawning, holding, and rearing habitat present within these reaches.

### 3.6.2.2 Significance Criteria

Significance criteria used to assess the potential impacts of the Proposed Project on fisheries resources are based on the current scientific understanding of the 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 to substantially reduce the number or restrict 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 long-term 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.

#### 3.6.2.3 Impacts and Mitigation Measures

Table 9 summarizes the potential fisheries impacts that would result from the No-Project alternative and the Proposed Project.

| **Table 6. Summary of Potential Fishery Resource Impacts for the No-Project and Proposed Project Alternatives** | | |
|---|---|---|
| **No-Project Alternative** | **Proposed Project** | **Proposed Project With Mitigation** |
| Impact 3.6-1. Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon. | | |
| No impact | Significant | Less than significant |
| Impact 3.6-2. Implementation of the project could result in increased erosion and sedimentation that could adversely affect fishes, including the federally and state-listed coho salmon. | | |
| No impact | Significant | 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 the federally and state-listed coho salmon. | | |
| No impact | Significant | Less than significant |
| Impact 3.6-4. Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon. | | |
| No impact | Significant | Less than significant |
| Impact 3.6-5. Implementation of the project would result in the permanent and temporary loss of SRA habitat for anadromous salmonids. | | |
| No impact | Significant | Less than significant |
| Impact 3.6-6. Implementation of the project would result in fish passage being temporarily impaired during the in-stream construction phase. | | |
| No impact | Significant | Less than significant |

Impact 3.6-1: Implementation of the proposed project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon.

#### NO-PROJECT ALTERNATIVE

Under the No-Project 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. As described in Chapter 1, the TRRP and other entities have been implementing channel rehabilitation projects for several years. These projects continue to affect the Trinity River with regards to flows, sediments, channel morphology, and riparian vegetation. These effects would continue to influence the spawning and rearing habitat for anadromous fishes, irrespective of this alternative. Under this alternative, there would be no impact.

#### PROPOSED PROJECT

At the Lower Steiner Flat Rehabilitation Site low-flow side channels, separated from the main channel by either unvegetated medial bars or vegetated islands, would be created. This would enhance the habitat value by directing a larger proportion of the flow into it, and providing more lateral connections. These actions would increase the quality, quantity, and frequency of the available rearing habitat. The project would also retain some existing high flow side channels that currently provide refugia during high flows. These areas would provide lower velocities during high flow. The proposed alcoves would provide high quality habitat rearing habitat at the exits of side channels and high flow side channels. Large wood would be placed strategically in the alcoves to provide cover and shade. Placing wood in alcoves would improve the quality of habitat by providing cover for juvenile fish, enhancing roughness and complexity, and increasing shading.

At the Upper Junction City Rehabilitation Site low flow side channels would be created that would provide immediate fry rearing habitat. In addition, it would serve as a flow conduit to connect new wetland features with the mainstem channel at moderate and high flows. Creation of a split flow channel would provide additional shallow water, eddies, and shoreline with cover at baseflow. More of the vegetated bar surface would become inundated and provide new rearing habitat as discharge increases. An alcove would also be created to provide slow water habitat over a wide range of discharges. Construction of a rearing pond complex would provide off-channel rearing habitat for fishes. Water would flow through this area during the spring release or winter storms, bringing young fish in. When flows drop, the young fish would remain in the ponds and spend the summer and fall there. Greater primary productivity in off-channel ponds would contribute to rapid growth (Limm and Marchetti 2009). Fish would be returned to the mainstem during high flows events in the following winter or spring.

##### Coho Salmon

Under the Proposed Project, no permanent adverse effects to coho salmon spawning habitat would occur within the rehabilitation sites. Instead, the Proposed Project is expected to result in immediate as well as long-term improvements. Figures 9, 10, and 11 illustrate the extent of the grading, excavating, and coarse sediment addition that would occur below the OHWM in riverine habitat at each of the sites. Long-term design objectives are that implementation of the Proposed Project along with the flow management regime implemented by the TRRP would reactivate channel migration across the floodplain within the boundaries of the sites. This dynamic fluvial channel would result in a net increase in point bar surface area through coarse sediment deposition,

increasing spawning habitat within the boundaries of the sites. The addition of coarse sediment would immediately provide suitable sized spawning gravels to coho and other salmonids.

Adverse effects on spawning habitat are expected to be limited to short-term, localized sedimentation caused by settling of silt disturbed by bank-side excavation activities; and the addition of coarse sediment material, including contouring and grading in the low-flow channel. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. Any salmon redds on or near the in-channel work could be destroyed or disturbed by these construction activities. Silt suspended by these activities may be dispersed and re-settle on downstream suitable spawning areas near the construction area. However, all in-channel work would be conducted only during late-summer (July 15-September 15) low-flow conditions, as authorized by NMFS and CDFG, to avoid impacts to spawning anadromous salmonids.

Some temporary effects on the quality of habitat for juvenile salmonids would occur through removal of riparian vegetation that contributes to SRA habitat in the project reaches. The principal effects of in-channel work on fish include displacement of rearing salmonid fishes from their habitat and 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). However, it is expected that all displaced juvenile fish, including coho salmon, would find suitable habitat within river reaches upstream or downstream of the sites, because juvenile rearing habitat within the mainstem Trinity River is likely under-saturated during summer and fall months (NMFS 2006). The potential direct and indirect effects to fish resulting from increased suspended sediment and turbidity levels are addressed further under Impact 3.6-2.

The adverse impacts on habitat are expected to be offset in the long term by benefits associated with project implementation at the Proposed Project sites. These benefits would accrue from: 1) the constructed inundation surfaces, 2) overall reconnection of these inundated surfaces to the river at low flows, 3) increased bed mobility and potential channel migration through the alluvial surfaces, and 4) revegetation of these surfaces with native plant species that would contribute shade and large wood to the river channel. Improved connectivity, particularly during high flows is expected to increase areas of slow, shallow-water habitat preferred by salmonid fry. The process of channel migration may also create new point bars, further increasing the availability of this preferred habitat. The constructed main channel branches, potential channel migration processes, engineered side channels and alcove habitats would collectively increase the relative abundance of rearing habitat, compared to the existing condition. Approximately 0.545 acres of low slope (glide) habitat would be impacted by in-channel and riverine work (i.e., main channel split flow) and in-channel fill at the Lower Steiner Flat Rehabilitation Site. Of that total impact, 0.149 acres would occur in Phase A and 0.396 acres would occur in Phase B (as shown in Figures 9 and 10). At the Upper Junction City Rehabilitation Site, approximately 0.231 acres of low slope (glide) habitat would be impacted by in-channel and riverine work (i.e., main channel split flow) and in-channel fill (as shown in Figure 11).

Ultimately, the collective changes in channel morphology as a result of the Proposed Project would improve rearing habitat diversity and abundance, for all anadromous salmonids. LWD would be strategically placed to provide complex physical habitat for juvenile and adult fish in the Trinity River. Large wood hydraulic and habitat structures would create spawning and rearing habitat,

increase nutrient and organic matter retention (which increases food production in the system), and provide refuge from predators and cover during high winter flows (Bustard and Narver 1975; Lestelle 1978; Lestelle and Cederholm 1982; Hicks et al. 1991; Cederholm et al. 1997).

#### Chinook Salmon

Potential impacts and benefits to chinook would be generally similar to those previously described for coho salmon. Spring- and fall-run salmon potentially spawn and rear within the sites. Juvenile spring-run chinook salmon would be expected to rear year-round within the sites and may be displaced by in-river work activities. Additionally, prior to spawning adult spring-run chinook salmon may utilize holding habitat offered by run, glide, and pool areas within the sites. No permanent adverse impacts to spring-run chinook salmon holding habitat would occur. The Proposed Project does not include activities that would directly fill, modify, or otherwise affect the quality or quantity of spring-run holding habitat. Temporary effects on spring-run chinook holding habitat associated with construction of the Proposed Project would be limited to short-term, localized increases in transient turbidity caused by bank-side excavation activities; main channel split flow construction; island construction; and contouring and grading in the low flow channel. The potential effects of increased suspended sediment and turbidity to holding adult spring-run chinook salmon are addressed under Impact 3.6-2.

#### Steelhead

Potential impacts and benefits to steelhead resulting from implementation of the Proposed Project would be generally similar to those previously described for coho and chinook salmon. Summer, fall, and winter runs of steelhead may migrate and stage within or near the sites and may spawn (as adults) and rear (as juveniles).

#### Pacific Lamprey

Potential impacts and benefits to Pacific lamprey resulting from implementation of the Proposed Project would be similar to those previously described for coho salmon and other anadromous salmonids. The removal of riparian vegetation that contributes to SRA habitat within the sites could 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 Riparian Revegetation and Monitoring Plan, described in Appendix A, would lessen this impact over the longer term.

Although the impacts to coho salmon and other anadromous fish under the Proposed Project would be temporary and localized, they would be significant.

#### Mitigation Measures

Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-1a and 4.6-1b described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-2: Implementation of the proposed project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state-listed coho salmon.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species because the project would not be constructed. Similar to previous discussions, this alternative acknowledges that a number of restoration activities that are intended to restore the fishery resources and functional values offered by the mainstem Trinity River have been implemented or are ongoing. While some of these activities may result in changes to erosional processes and sedimentation levels, these changes are taken into account in the evaluation of this alternative. The No-Project alternative would not result in an impact with respect to this issue.

#### PROPOSED PROJECT

##### Coho Salmon

Activities related to implementation of the Proposed Project would result in the localized loss of vegetation and general disturbance to the bed and banks of the Trinity River. Removal of vegetation and soil could accelerate erosion processes within the boundaries of the rehabilitation sites and increase the potential for sediment delivery to the Trinity 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).

In-channel and riverine activities would disturb the alluvial materials that constitute the bed and banks of the Trinity River. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. Exposed soils on the upland and staging areas are susceptible to mobilization from rainfall during early season runoff events. In-river excavation is planned as part of the Proposed Project; therefore, it is expected that excavation and operation of heavy equipment would resuspend silt and sand, and result in localized and temporary increases of suspended sediment and turbidity.

Operation of heavy equipment in the active channel during these activities would likely resuspend streambed sediments. Any juvenile coho salmon rearing in the area during in-channel construction may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity.

Erosion and deposition of fine sediments associated with implementation of the Proposed Project are expected to be localized and temporary. Some fine-textured materials may settle near or on spawning habitats located downstream of riverine rehabilitation areas, but these materials are not expected to impair redd excavation or spawning. Excavation, grading, and coarse sediment addition within the channel would occur only during low-flow conditions between July 15 and September 15, minimizing the potential for adverse effects on all life stages of coho salmon. 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 and amended Biological Opinion for in-river work.

#### Chinook Salmon

Potential impacts to chinook salmon populations in the Trinity River resulting from project implementation would be generally similar to those described for coho salmon. Consequently, re-suspension of fine-textured sediment, potential erosion and sediment runoff, and elevated turbidity for short distances downstream could occur during the migration, spawning, and rearing seasons. Spring- and fall-run chinook salmon are known to spawn in suitable habitats within and adjacent to the sites. Construction activities are proposed during the spawning period, and in-river construction may temporarily displace holding adult salmonids. 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. Juvenile spring-run chinook salmon are expected to rear throughout the year within or adjacent to the sites' boundaries, and transient increases in turbidity and re-suspension of sediments would be likely to have similar effects on juvenile chinook salmon as on coho salmon. Adult spring-run chinook salmon using holding habitat during the summer months may be displaced to other holding habitats either upstream or downstream by transient turbidity and sediment plumes created by construction activity.

#### Steelhead

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

#### Pacific Lamprey

Potential impacts to Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho salmon and other anadromous salmonids. Adult Pacific lampreys migrate upstream from spring through early summer and again in the fall to spawn. Larval lampreys inhabit the river year-round. Siltation of nests that may be built in suitable habitats (i.e., low-slope 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.

While the Proposed Project would increase aquatic habitat within the boundaries of the sites, the proposed construction activities would result in an increase in erosion and sedimentation in the short-term. While the long-term impact would be beneficial, the short-term impacts on fishes within the Trinity River would be significant.

#### MITIGATION MEASURES

Implementation of the project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-2a, 4.6-2b, 4.6-2c, 4.6-2d, and 4.6-2e described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-3: Construction activities associated with the Proposed Project could result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state-listed coho salmon.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no risk of accidental spills of hazardous material because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

**Coho Salmon, Chinook Salmon, Steelhead, and Pacific Lamprey**

Construction activities typically include the refueling of construction equipment on location. The Proposed Project also includes activities that would place mechanized equipment (e.g., trucks, excavators) within the active channel for short periods. As a result, minor fuel and oil spills could occur and there would be a risk of larger releases. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. 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 life stages of salmonids and other anadromous fish within close proximity to construction activities. Although short-term, these impacts are considered significant.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state-listed coho salmon. Therefore, mitigation measure 4.6-3a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impact to less than significant. Section 3.5, Water Quality, and Section 3.13, Hazards and Hazardous Materials, provide additional details on mitigation measures developed for water quality standards, hazards, and hazardous materials.

Impact 3.6-4: Construction activities associated with the Proposed Project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, construction-related mortality to rearing salmonids would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

**Coho Salmon**

Coho salmon are known to occur throughout the Trinity River. Suitable coho salmon rearing habitat exists within the boundaries of the rehabilitation sites, and juvenile coho salmon may rear within these boundaries year-round. Adult coho migrate through the sites and use suitable spawning habitat throughout the 40-mile reach of the Trinity River below Lewiston Dam. Direct injury to, or mortality of, coho salmon could occur during in-river construction activities. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. These activities would be conducted only during late-summer low-flow conditions (e.g., July 15 – September 15), thus, minimizing the potential for direct mortality to rearing coho, because this period corresponds to a time of the year when the fewest number of juvenile coho salmon are known to occur in project reaches.

NMFS expects that all displaced juvenile fish, including coho salmon, would find suitable habitat within river reaches upstream or downstream of the sites, because juvenile rearing habitat within the mainstem Trinity River is likely under-saturated during summer and fall months (NMFS 2006). The construction period identified above would completely avoid the spawning period for coho salmon; therefore, direct impacts to adult coho salmon or their eggs/alevins (yolk-sac fry) would not occur.

A small, temporary, but uncertain level of stranding of coho salmon fry could occur on the newly constructed inundation surfaces and side channels during rapidly receding flood-flow periods in the winter and early spring when fry are emerging. Additionally, construction of side channel features could 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 et al. 2001), the constructed features could increase this process to varying degrees. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk. While the activities included in the Proposed Project are intended to benefit coho salmon, the short-term construction impacts would be significant.

#### Chinook Salmon

Potential impacts to chinook salmon populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those described for coho salmon. Physical construction within and directly adjacent to the river channel could disturb holding spring-run chinook salmon. The principal effect to spring-run chinook is that they would be forced to relocate. The Proposed Project would not impair migration, and spring-run chinook salmon would be able to locate and use suitable holding habitat outside of the disturbed areas. Water temperatures are the coolest in the reach of the Trinity River that encompasses the Proposed Project sites, and physiological effects, or ultimately death, are not expected as temperatures in these reaches of the Trinity River (13-15 °C) are below the threshold observed where spring run can accumulate stresses. Based on studies on temperature tolerance, temperatures in other locations within this section of the Trinity River are sufficiently cool that spring-run chinook salmon are able to deal with stressors (e.g., relocation) without adverse effect (North State Resources 2005).

#### Steelhead and Pacific Lamprey

Potential impacts to steelhead populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho and other anadromous salmonids. While the activities included in the Proposed Project are intended to benefit salmonids and other aquatic organisms, the short-term construction impacts would be significant.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-4a, 4.6-4b, 4.6-4c, 4.6-4d, and 4.6-4f described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-5: Implementation of the Proposed Project would result in the permanent and temporary loss of SRA for anadromous salmonids.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, loss of SRA habitat would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

As described in the Trinity River Master EIR Section 4.6, Fishery Resources, the term *riparian habitat* encompasses the range of riparian vegetation conditions along the river corridor including rehabilitation sites. It does not have a specific legal description or definition. For the purposes of this document, the term riparian habitat encompasses the range of riparian vegetation conditions within the boundaries of the sites and is synonymous with SRA habitat.

##### Coho Salmon, Chinook Salmon, Steelhead, and Lamprey

Removal of montane riparian wetland vegetation along the banks of the Trinity River could adversely affect the quality of SRA habitats used by rearing salmonids. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 as well as during implementation of Phase B. 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 LWD and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is an element of designated critical habitat for coho salmon and a component of EFH for chinook and coho salmon. Complexity in the riparian environment, an important component of fish habitat, would be increased over the long-term with construction at the Proposed Project sites.

To maintain overall SRA habitat values in the project reach, the Proposed Project will 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 will be installed along all riparian areas outside of delineated rehabilitation activity areas. These markers will prevent construction access so that impacts to riparian vegetation are minimized. Removal of the riparian berms and re-activation of adjacent floodplains within riverine activity areas would allow for natural revegetation of most of the riparian habitat that would be lost as a result of berm removal and floodplain contouring. Additionally, riparian habitat removed under the Proposed Project would be replaced during the revegetation efforts consistent with the requirements of the Riparian Revegetation and Monitoring Plan. While no permanent net loss of SRA features would necessarily occur, the short-term impact of removing riparian vegetation (see Figures 12, 13, and 14) is considered a significant impact.

#### MITIGATION MEASURES

Proposed Project implementation would result in a permanent and temporary loss of SRA for anadromous salmonids. Therefore, mitigation measures 4.6-5a, 4.6-5b, and 4.6-5c described in Appendix A will be implemented to reduce the potential for impacts. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

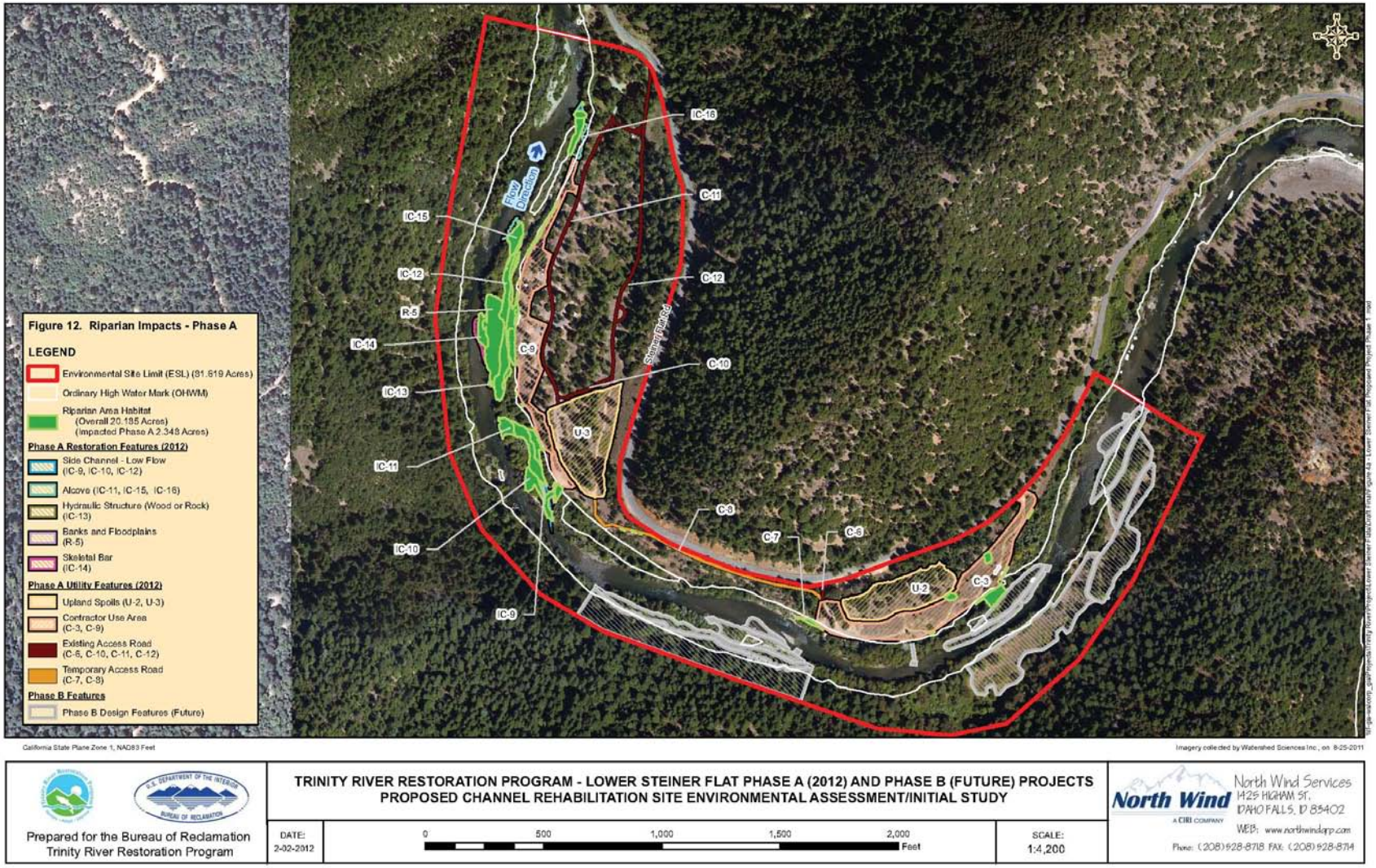


**Figure 6. Impacts of the Proposed Project on Riparian Area Habitat at the Lower Steiner Flat Rehabilitation Site, Phase A.**

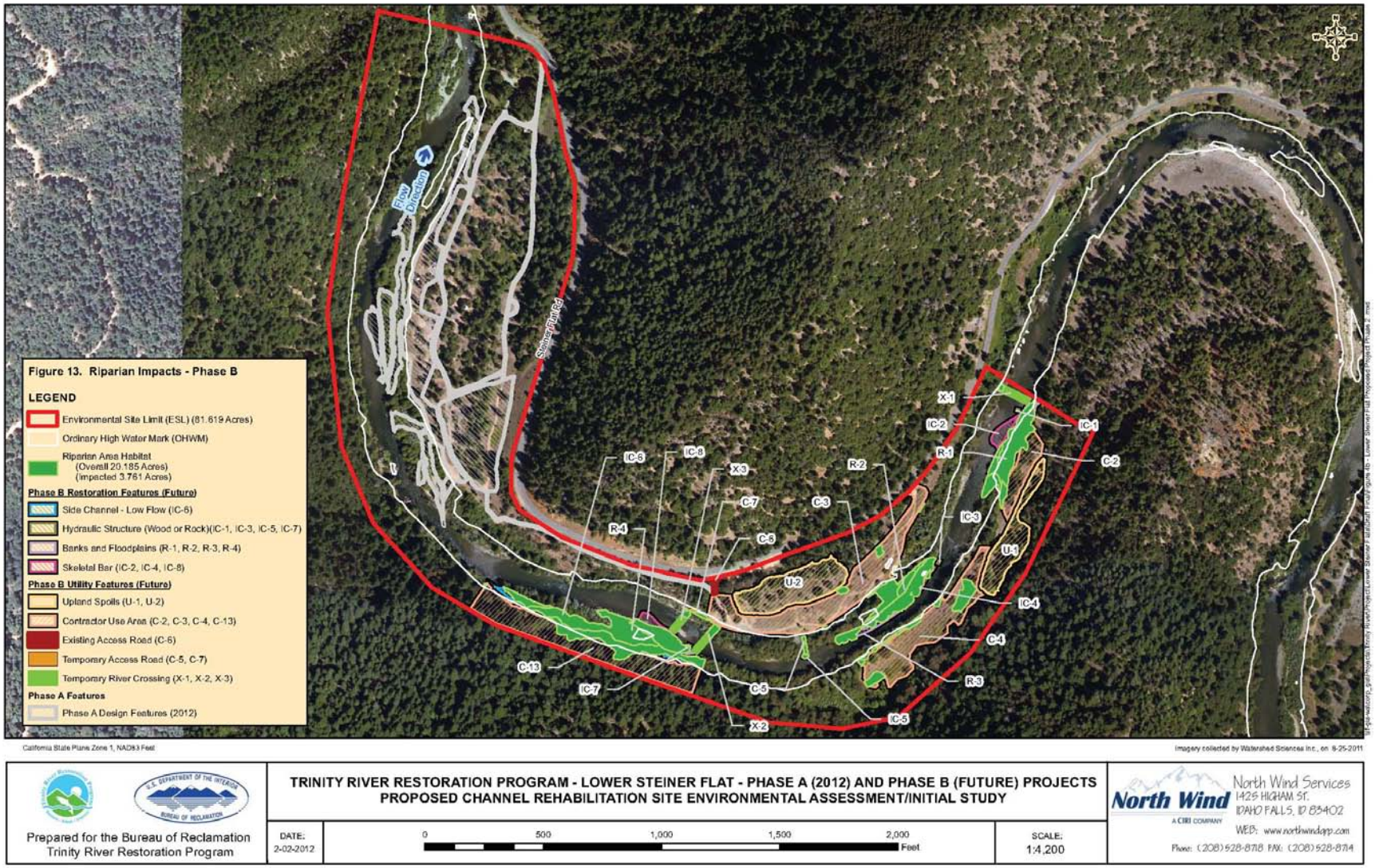


**Figure 7. Impacts of the Proposed Project on Riparian Area Habitat at the Lower Steiner Flat Rehabilitation Site, Phase B.**

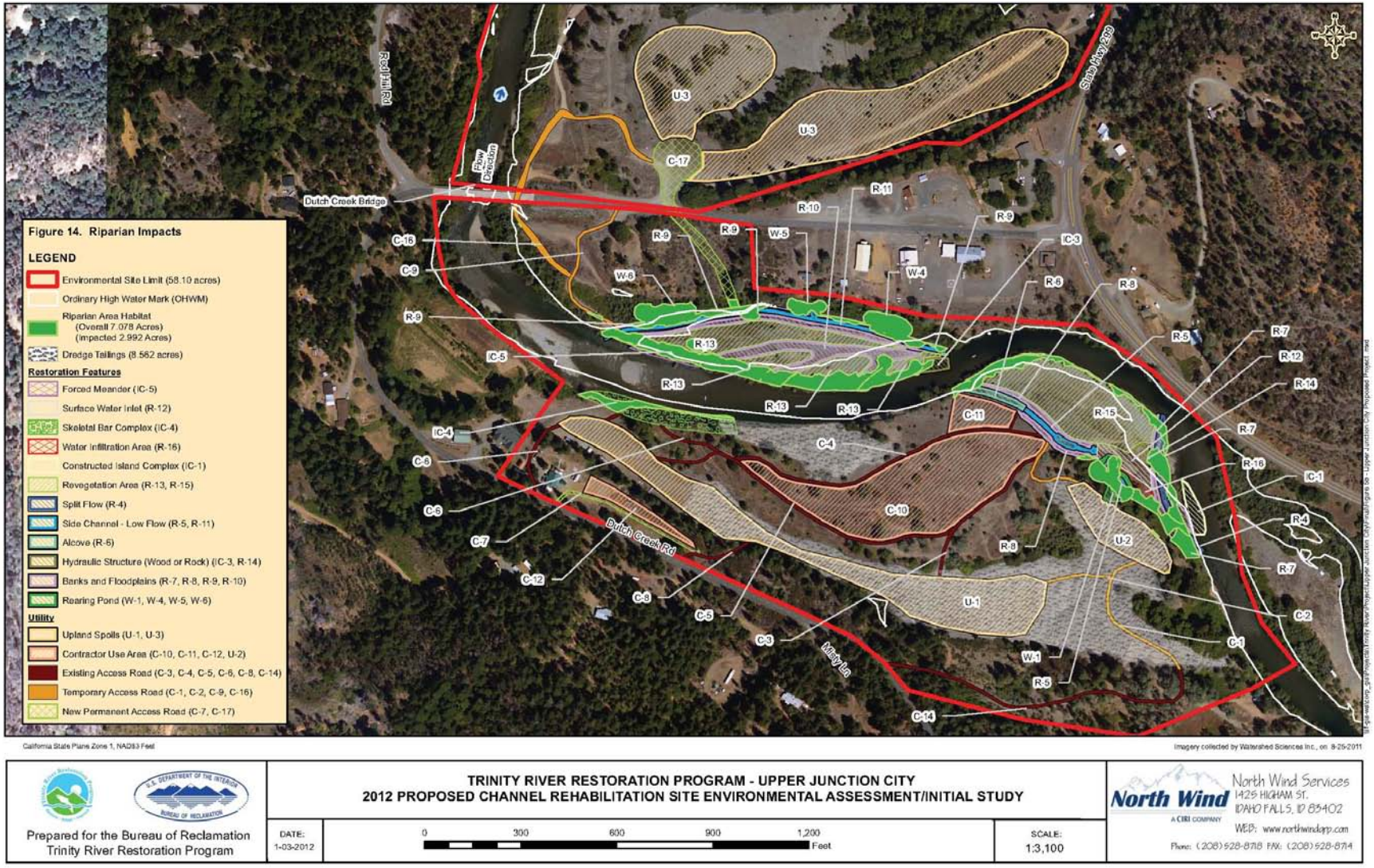


**Figure 8. Impacts of the Proposed Project on Riparian Area Habitat at the Upper Junction City Rehabilitation Site.**

Impact 3.6-6: Implementation of the Proposed Project would result in fish passage being temporarily impaired during the in-stream construction phase.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, temporary impairment of fish passage would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction activities at the Upper Junction City site would not require temporary placement of low-flow channel crossings to move heavy equipment across the low-flow channels. Therefore, the impact would be less than significant at that site.

Implementation of Phase B at the Lower Steiner Flat site includes three temporary river crossings. Two low water crossings (X-1 and X-2), at RM 91.1 and 90.7, are required to construct the project, and the one temporary bridge crossing (X-3) at RM 90.7 is the access route for delivery of all spoil material from the river left elements to the upstream right bank spoil area (U-2). The crossings would be constructed to maintain adequate water depths and velocities for fish passage.

#### Coho Salmon

The crossings would only be constructed during late-summer, low-flow conditions (e.g., July 15–September 15). However, crossings of the river at low-flow conditions during other months (e.g., October–December) may occur via the bridge. Consequently, it is likely that some work adjacent to the channel would occur during the coho salmon spawning period. Use of the temporary bridge would be restricted to the timeframes outlined in the 2000 Biological Opinion (NMFS 2000).

Use of river crossings could occur during the onset of the fall coho smolt emigration, depending on seasonal conditions (flow, temperatures, etc.) and would occur during the coho adult migration and spawning period. Upon completion of work in riverine areas requiring use of low-flow channel crossings, these crossings would be dismantled and materials would be contoured to the river bottom. Fill materials would consist of appropriately sized spawning gravel as specified by NMFS and CDFG.

Fish passage design is normally based on the weakest species or life stage present that requires upstream access and should accommodate the weakest individual within that group. For the Proposed Project, low-flow channel crossings would need to meet velocity criteria for upstream migrating juvenile salmonids and depth criteria for migrating adult salmonids, including the federally threatened coho salmon. Maximum velocities and minimum depths are adopted from NMFS Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001) and Part IX Fish Passage Evaluation at Stream Crossings of CDFG's California Salmonid Stream Habitat Restoration Manual (CDFG 2003a).

Although the construction period could extend into the smolt emigration and coho salmon spawning season, the effect of the low-water crossings on fish passage is expected to be temporary and minimal. Adult anadromous fish generally expend approximately 80 percent of their stored energy reserve during normal upstream migration to suitable spawning areas. Undue exertion or delay at stream-road crossings due to unsuccessful passage attempts at inadequate (blocking) structures can lead to reduced spawning success and pre-spawning mortality (Robison et al. 1999). Adequate depth and velocities over the crossing would allow both juvenile and adult passage. While long-term beneficial changes to physical rearing habitat associated with implementing the

Proposed Project are anticipated, the temporary impacts on fish passage would be considered significant.

#### Chinook Salmon

Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River would be similar to those previously described for coho salmon. However, adult migrants from the spring and fall runs of chinook salmon would be expected to pass through, stage, and/or spawn within the project boundaries during the construction season. The temporary placement of gravel fill at low-flow channel crossings would not preclude fish passage since adequate depths and velocities would be maintained at the crossings.

#### Steelhead

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

#### Pacific Lamprey

Potential fish passage impacts to Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho and chinook salmon and steelhead.

#### MITIGATION MEASURES

Implementation of the Proposed Project would result in fish passage being temporarily impaired during the in-stream construction phase. Therefore, mitigation measures 4.6-6a, 4.6-6b, 4.6-6c, and 4.6-6d described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

## 3.7 Vegetation, Wildlife, and Wetlands

This section describes the vegetation, wildlife, and wetlands that are known to occur at the Proposed Project sites and evaluates the impacts of the Proposed Project on these resources. The discussion of biological resources is based on a focused literature review, informal consultation with resource agencies, and observations made during field visits. Additional information about these resources is contained in Section 4.7 of the Trinity River Master EIR.

### 3.7.1 Affected Environment/Environmental Setting

#### 3.7.1.1 Plant Communities

There are a variety of plant communities present at the Proposed Project sites. The plant communities known to occur at the sites are shown on Figures 15 and 16 and listed in Table 10. The identification and delineation of these habitat types are based on the draft *Trinity River Riparian Vegetation Map 2008 Update* (TRRP 2009). The main plant communities present are described below. Those plant communities as well as the others that are present at the sites are discussed in more detail in the Trinity River Master EIR (Section 4.7).

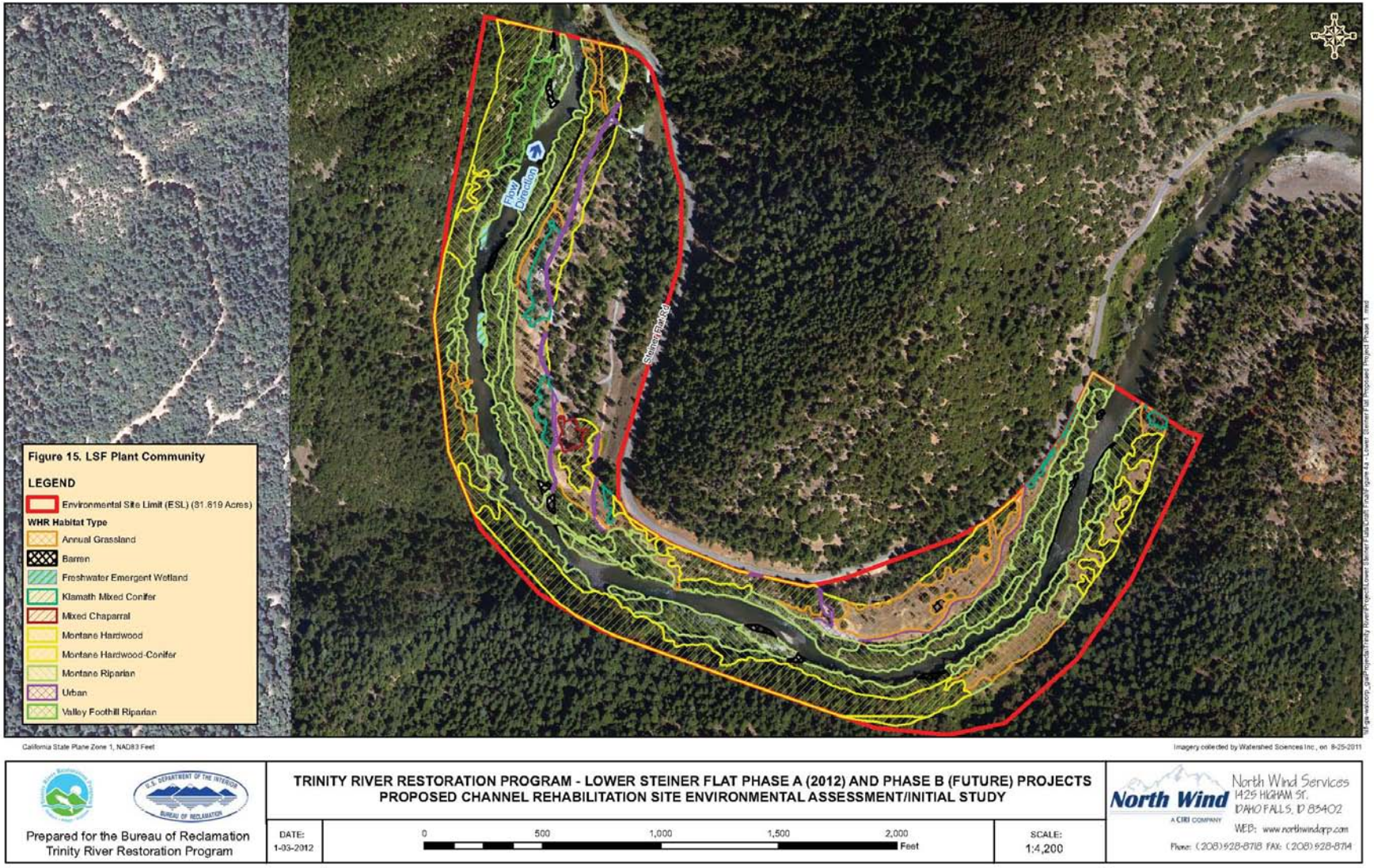


**Figure 9. Plant Community Habitats in the Lower Steiner Flat Rehabilitation Site. (Habitat classification follows the California Wildlife Habitat Relationships [WHR] model.)**

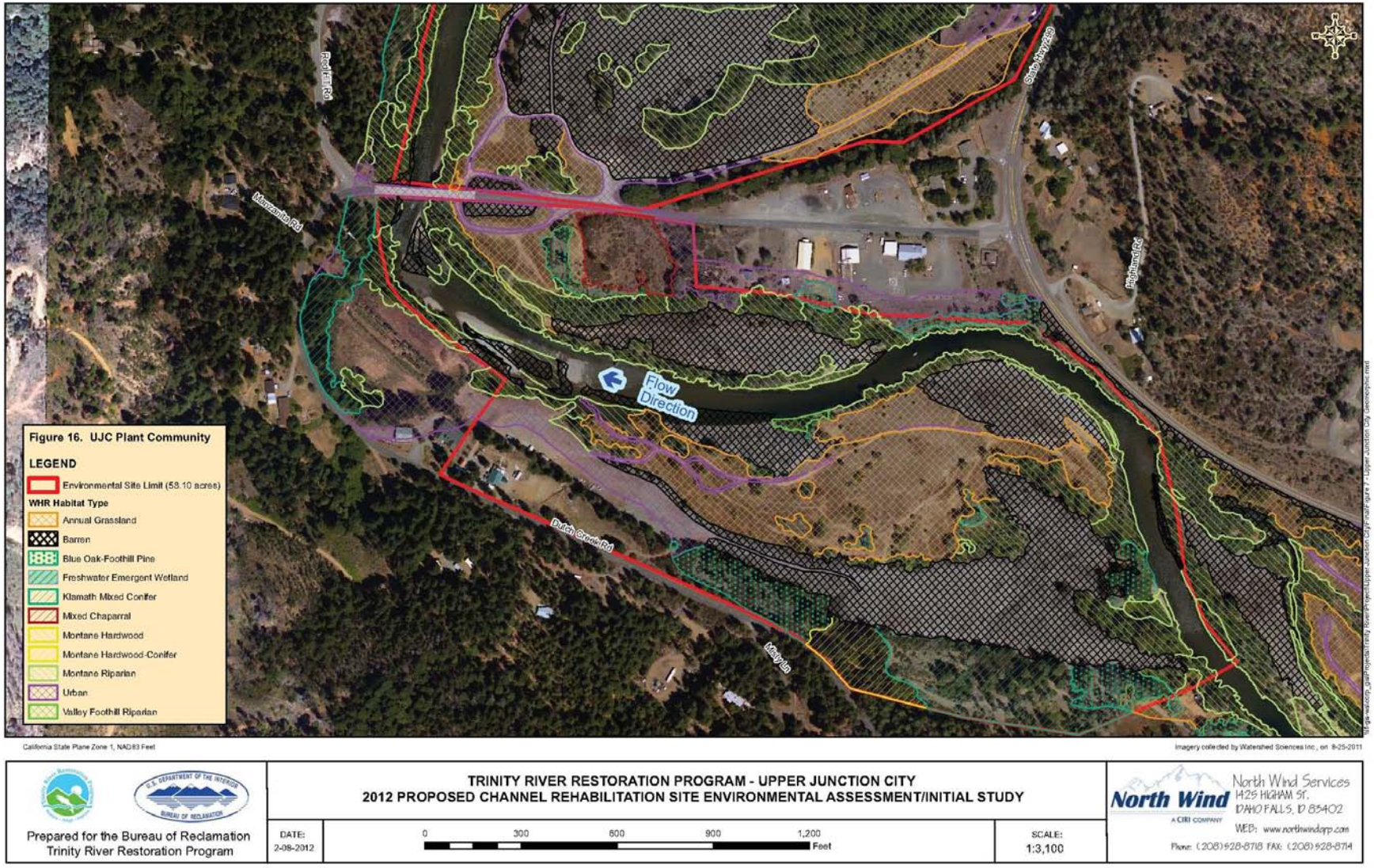


**Figure 10. Plant Community Habitats in the Upper Junction City Rehabilitation Site. (Habitat classification follows the California WHR model.)**

| Table 7. Plant Community Types Within the Proposed Project Site Boundaries | | |
|---|---|---|
| **PLANT COMMUNITY TYPES** | **LSF (ACRES)** | **UJC (ACRES)** |
| Montane riparian | 19.123 | 6.691 |
| Montane hardwood - conifer | 15.494 | 1.076 |
| Riverine | 11.613 | 6.977 |
| Annual grassland | 9.305 | 10.162 |
| Barren | 0.736 | 14.940 |
| Blue oak-foothill pine | — | 3.410 |
| Klamath mixed conifer | 1.233 | 3.144 |
| Urban | 0.895 | 2.841 |
| Valley foothill riparian | 0.880 | 0.340 |
| Montane hardwood | 1.041 | — |
| Mixed chaparral | 0.251 | 1.393 |

#### MONTANE RIPARIAN

Montane riparian habitat occurs along the riparian berm adjacent to the OHWM of the Trinity River that runs along much of the base of the SR-299 and Steiner Flat Road embankments. Dominant tree species include white alder (*Alnus rhombifolia*), Fremont's cottonwood (*Populus fremontii* ssp. *fremontii*), Oregon ash (*Fraxinus latifolia*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), red willow (*Salix laevigata*), and shining willow (*Salix lucida*). Understory trees and shrubs include narrow-leaved willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), California wild grape (*Vitis californica*), Himalayan blackberry (*Rubus discolor*), California blackberry (*Rubus ursinus*), and virgin's bower (*Clematis ligusticifolia*).

#### MONTANE HARDWOOD-CONIFER

In the northern interior of California, the montane hardwood-conifer community consists of at least one-third conifer and at least one-third broadleaf trees scattered throughout the landscape in a mosaic-like pattern of small pure stands of conifers interspersed with small stands of broad-leaved trees (Holland 1986; Mayer and Laudenslayer 1988). Geographically and biologically, this plant community often serves as an ecotone between dense coniferous forest and montane hardwood, mixed chaparral, or open woodland vegetation types. Dominant tree species typically observed include Pacific madrone, bigleaf maple, ponderosa pine (*Pinus ponderosa)*, gray pine (*Pinus sabiana*), Douglas-fir, canyon live oak, and black oak. Shrub species 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.

#### RIVERINE

Riverine habitat is abundant within the Proposed Project sites and is characterized as the active Trinity River channel within the OHWM as defined by a HEC-RAS model developed for Reclamation. Riverine habitat is dominated by run and riffle areas, with boulder, cobble, gravel, and sand substrates. Vegetation within the active river channel is sparse with occasional clumps of torrent sedge (*Carex nudata*). Montane riparian habitat occurs adjacent to riverine habitat in the sites.

#### ANNUAL GRASSLAND

Annual grassland occurs mostly on the floodplains and gravel bars of the rehabilitation sites. This plant community is dominated by non-native grasses and forbs, including soft brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), dyer's woad (*Isatis tinctoria*), rattail fescue (*Vulpia myuros*), Indian clover (*Trifolium albopurpureum*), yellow starthistle (*Centaurea solstitialis*), black mustard (*Brassica nigra*), and Dalmatian toadflax (*Linaria dalmatica*).

#### BARREN

Vegetation is very sparse in this habitat type consisting of opportunistic annual grasses and forbs including dyer's woad and isolated clumps of willow sprouts.

#### BLUE OAK-FOOTHILL PINE

Blue oak-foothill pine habitat is present in foothill communities where (*Pinus sabiana*) (also known as gray pine) is the dominant overstory species. Blue oak (*Quercus douglasii*) grows among the gray pines and understory vegetation typically includes common manzanita (*Arctostaphylos patula*), buck brush (*Ceanothus cuneatus*), skunkbrush (*Rhus trilobata*), and poison oak (*Toxicodendron diversilobum*). The herbaceous layer includes ripgut brome, cheatgrass, and false hedge-parsley (*Torilis arvensis*).

#### KLAMATH MIXED CONIFER

Klamath mixed conifer habitats typically are tall, dense to moderately open, needle-leaved evergreen forests with patches of broad-leaved evergreen and deciduous low trees and shrubs. This habitat is dominated by tall evergreen conifers up to 200 feet in height with a rich shrub layer and well-developed herbaceous layers. On more xeric sites, the habitat is a generally open but very diverse forestland, having a well-developed shrub layer. The overstory layer is characterized by a mixture of conifers. Typical dominant conifers in the proposed project area are Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), Ponderosa pine, and incense cedar (*Calocedrus decurrens*). Occasional broadleaf trees include canyon live oak (*Quercus chrysolepis*), and black oak (*Q. kelloggii*).

#### VALLEY FOOTHILL RIPARIAN

Valley-foothill riparian habitats are found in valleys bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. They are generally associated with low velocity flows, flood plains, and gentle topography. Dominant species in the canopy layer are cottonwood, California sycamore and valley oak. Sub canopy trees are white alder, boxelder and Oregon ash. Typical understory shrub layer plants include wild grape, wild rose, California blackberry, blue elderberry, poison oak, buttonbrush, and willows. The herbaceous layer consists of sedges, rushes, grasses, miner's lettuce, Douglas sagewort, poison-hemlock, and hoary nettle.

#### MONTANE HARDWOOD

In montane hardwood communities, typical dominant tree species include Pacific madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*), canyon live oak, and black oak. Associated shrub species include common manzanita (*Arctostaphylos 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.

#### MIXED CHAPARRAL

Mixed chaparral is a structurally homogeneous brushland type dominated by shrubs with thick, stiff, heavily cutinized evergreen leaves. The dominant species typically include greenleaf manzanita (*Arctostaphylos patula*) and buck brush.

### 3.7.1.2 Wildlife Resources

The wildlife species typically associated with the primary plant communities present in the project areas (Table 10) are summarized in the Trinity River Master EIR (Section 4.7). Special-status species potentially occurring within, or in close proximity to, the rehabilitation sites are also discussed in the Trinity River Master EIR (Section 4.7and Table 4.7-1). 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.

### 3.7.1.3 Non-Native and Invasive Plant Species

Non-native and invasive species are present at the Proposed Project sites. The approximate location and extent of high priority invasive plants were noted during vegetation surveys conducted for the sites. Invasive species observed at the Lower Steiner Flat site in April 2011 included common velvetgrass (*Holcus lanatus*), curly dock (*Rumex crispus*), dogtail grass (*Cynosurus echinatus*), hairy cats ear (*Hypochaeris radicata*), poison hemlock (*Conium maculatum*), rabbitfoot clover (*Trifolium arvense*), ripgut brome (*Bromus diandrus*), and Himalayan blackberry (*Rubus armeniacus*) (North Wind, Inc. 2011). Invasive species present at the Upper Junction City and Lower Junction City Rehabilitation Sites include black mustard (*Brassica nigra*), cheatgrass (*Bromus tectorum*), Dalmatian toadflax (*Linaria dalmatica*), yellow starthistle (*Centaurea solstitialis*), English plantain (*Plantago lanceolata*), moth mullein (*Verbascum blattaria*), white sweet clover (*Melilotis officinalis*), poison hemlock, Himalayan blackberry, tree of heaven (*Ailanthus altissima*), and dyer's woad (*Isatis tinctoria*) (North Wind, Inc. 2011).

The high priority noxious weeds that were most prevalent at the sites include Himalayan blackberry, yellow starthistle, Dalmatian toadflax, and dyer's woad. Himalayan blackberry was dominant in the understory of the montane riparian habitat type. Yellow starthistle, Dalmatian toadflax, and dyer's woad dominated much of the annual grassland and barren habitat type (USFWS and USBR 2011). Additional information regarding invasive species is presented in the Trinity River Master EIR (Section 4.7). Of the high priority weeds listed above, 35 acres of dyer's woad is currently being managed within the Upper and Lower Junction City project boundaries. Since 2010, management of this area has included manual removal of all visible dyer's woad plant material. Each year plants are removed from the site between mid-spring and early summer. During this period, two follow-up visits are made to remove additional plants and to ensure increased success. Plants removed are counted and the area is remapped in order to document a change in population size. Project implementation activities could reduce the effectiveness of ongoing efforts to eradicate dyer's woad and increase the risk of dyer's woad spreading along the Trinity River corridor. The area infested with dyer's woad is mapped within the proposed upland spoils area (U-3) and access routes to the nearby floodplain. Upland spoils areas and their access routes (e.g., C-9, C-16, and C-17) are high traffic areas. In the spoils areas, heavy equipment would deposit excavated material from designated work areas from which the material is removed. In this case excavated material from the proposed side channel (R-5 and R-11), wetlands (W-4, W-5, and

W-6), floodplain (R-13), and two in channel work areas (IC-3 and IC-5) would be placed in the proposed U-3 terrace. Repeated trips between the U-3 spoil area and the nearby floodplain (R-13) could spread noxious weed seeds (dyer's woad is of primary concern) from contaminated upslope sources to newly constructed areas, and possibly into the river itself. It is most important to ensure that these seeds are not allowed to reach the river and deposit downstream or become established on the newly constructed floodplain.

The project now plans to bury existing invasive weeds within the spoil area and thereby prevent germination. However, if the spoil area was ever disturbed in the future, then dyer's woad, and other buried seeds, could reinvade the area and could invade new habitat along the Trinity River corridor, grassland and barrens on private and federal lands. The viability of dyer's woad seed in the seed bank is currently unknown and needs further study. Due to the plant's noxious weed status, relatively low abundance in Trinity County, abundant seed production, and adaptability to thrive in disturbed areas, all necessary measures would be taken to prevent the plants spread.

In 2007, a Trinity River Invasive Species Study (North State Resources 2007) identified dyer's woad as a noxious weed species of concern. The resulting document, Distribution and Applied Management of Invasive Plant Species at Proposed Rehabilitation Sites along the Mainstem of the Trinity River, describes the plant's biology, habitat, and management strategies. This report is available for review at:
http://odp.trrp.net/FileDatabase/Documents/10042__Trinity_Invasives_Final_Report1.pdf.

#### 3.7.1.4 Jurisdictional Waters (Including Wetlands)

Eight jurisdictional water types, including wetlands and other waters, occur at rehabilitation sites along the Trinity River. Jurisdictional water types present in the Proposed Project sites are shown in Table 11. Each of these is briefly described below. Within the Lower Steiner Flat Rehabilitation Site boundaries there are a total of 31.798 acres of jurisdictional waters and within the Upper Junction City Rehabilitation Site boundaries there are a total of 14.055 acres. There are 20.185 acres of total wetlands at the Lower Steiner Flat site and 11.633 acres of other waters, comprised primarily of the Trinity River riverine feature. At the Upper Junction City site, there are 7.078 acres of total wetlands and 6.977 acres of riverine features in the form of the Trinity River, within the Upper Junction City ESL. The locations of these features are shown on Figures 17 and 18 for Lower Steiner Flat and Figure 19 for Upper Junction City. Jurisdictional waters were verified by the USACE during a January 11, 2012 site visit. Minimal changes to the wetlands depicted in this document were noted so that the final wetland maps will be very similar to those portrayed in this EA/IS. A letter of jurisdictional determination has not yet been received for the USACE. There are approximately 0.5 acres of seasonal wetlands within the Lower Junction City ESL that were not originally surveyed. During construction, these resources would be avoided through adjustments to the boundary of the spoil area. A post-project delineation would be performed after 5 years to verify project impacts to waters of the U.S.

| **Table 8. Summary acreages of USACE Jurisdictional Waters and Wetlands within the Proposed Project Sites** | | | | |
|---|---|---|---|---|
| **Feature Type** | | **LSF Phase A (acres)** | **LSF Phase B (acres)** | **UJC (acres)** |
| Perennial Stream (PS) / Riverine Trinity River | Total acres<br>Impacted acres<br>(Total length - feet) | 11.613<br>0.356<br>(5,493) | 11.613<br>0.832<br>(5,493) | 6.977<br>0.253<br>(3,510) |
| Intermittent Stream (IS) | Total acres<br>Impacted acres<br>(Total length - feet) | 0.020<br>0<br>(489) | 0.020<br>0<br>(489) | — |
| **Total Other Waters** | **Total acres**<br>**Impacted acres** | **11.633**<br>**0.356** | **11.633**<br>**0.832** | **6.977**<br>**0.253** |
| Riparian Wetland (RW) | | | | |
| Above OHWM | Total acres<br>Impacted acres | 1.742<br>0 | 1.742<br>0.073 | 4.722<br>1.574 |
| Below OHWM | Total acres<br>Impacted acres | 17.422<br>2.458 | 17.422<br>3.503 | 2.309<br>1.410 |
| Seasonal Wet Meadow (SWM) | | | | |
| Above OHWM | Total acres<br>Impacted acres | 0.030<br>0 | 0.030<br>0.026 | — |
| Below OHWM | Total acres<br>Impacted acres | 0<br>0 | 0<br>0 | |
| Depressional Wetland (DW) | | | | |
| Above OHWM | Total acres<br>Impacted acres | 0.866<br>0.177 | 0.866<br>0.056 | — |
| Below OHWM | Total acres<br>Impacted acres | 0<br>0 | 0<br>0 | |
| Spring/Seep (SS) | | | | |
| Above OHWM | Total acres<br>Impacted acres | 0.014<br>0 | 0.014<br>0 | — |
| Below OHWM | Total acres<br>Impacted acres | 0<br>0 | 0<br>0 | |
| Seasonal Wetland (SW) | | | | |
| Above OHWM | Total acres<br>Impacted acres | 0.111<br>0.103 | 0.111<br>0.103 | — |
| Below OHWM | Total acres<br>Impacted acres | 0<br>0 | 0<br>0 | |
| Fresh Emergent Wetland (FE) | | | | |
| Above OHWM | Total acres<br>Impacted acres | — | — | 0.047<br>0.008 |
| Below OHWM | Total acres<br>Impacted acres | | | 0<br>0 |
| **Total Wetlands** | **Total acres**<br>**Impacted acres** | **20.185**<br>**2.738** | **20.185**<br>**3.761** | **7.078**<br>**2.992** |
| **Total Jurisdictional Waters** | **Total acres**<br>**Impacted acres** | **31.798**<br>**3.094** | **31.798**<br>**4.593** | **14.055**<br>**3.245** |

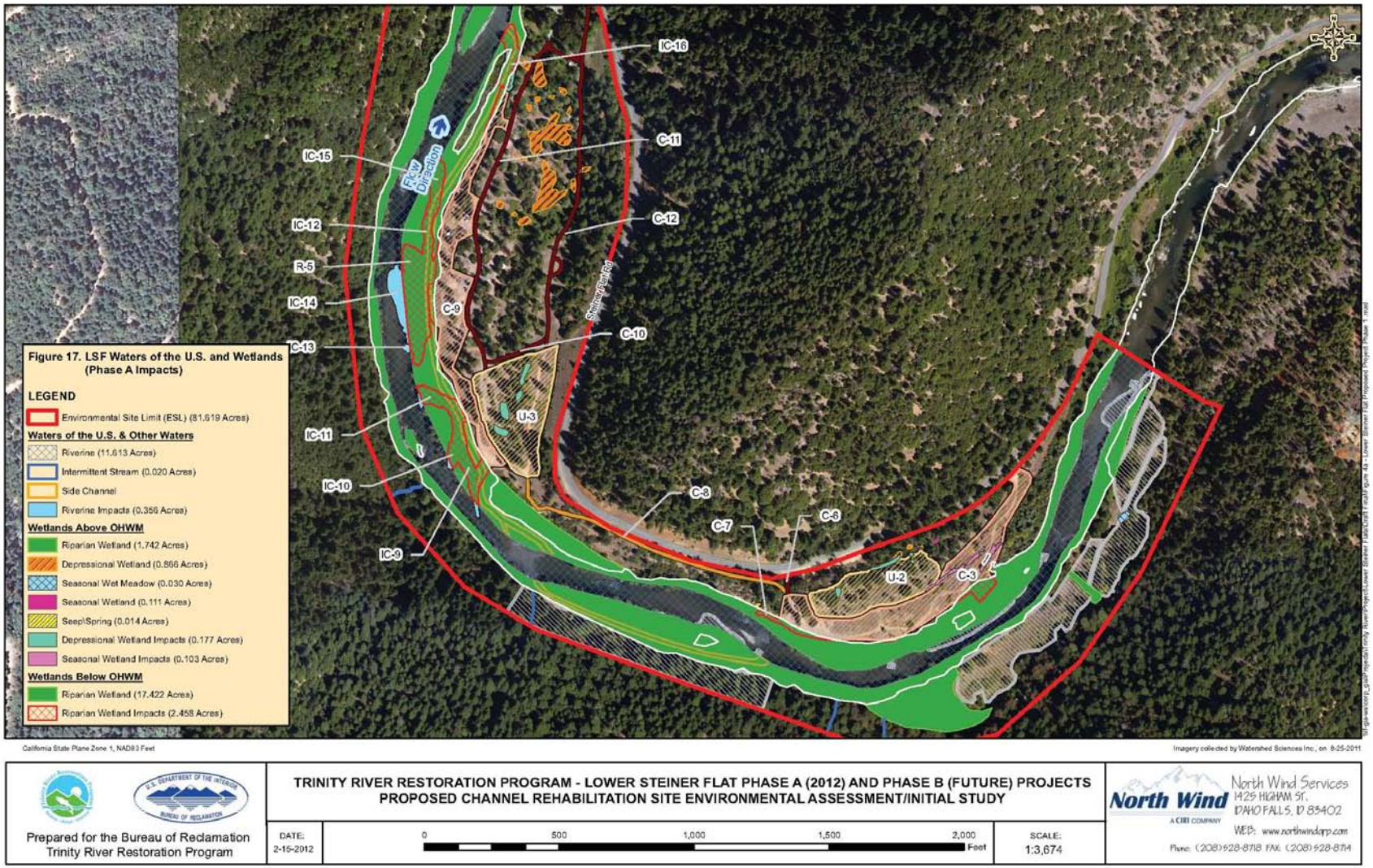


**Figure 11. Boundaries of Waters of the United States, Including Wetlands, and Potential Project Impacts, in the Lower Steiner Flat Rehabilitation Site, Phase A.**

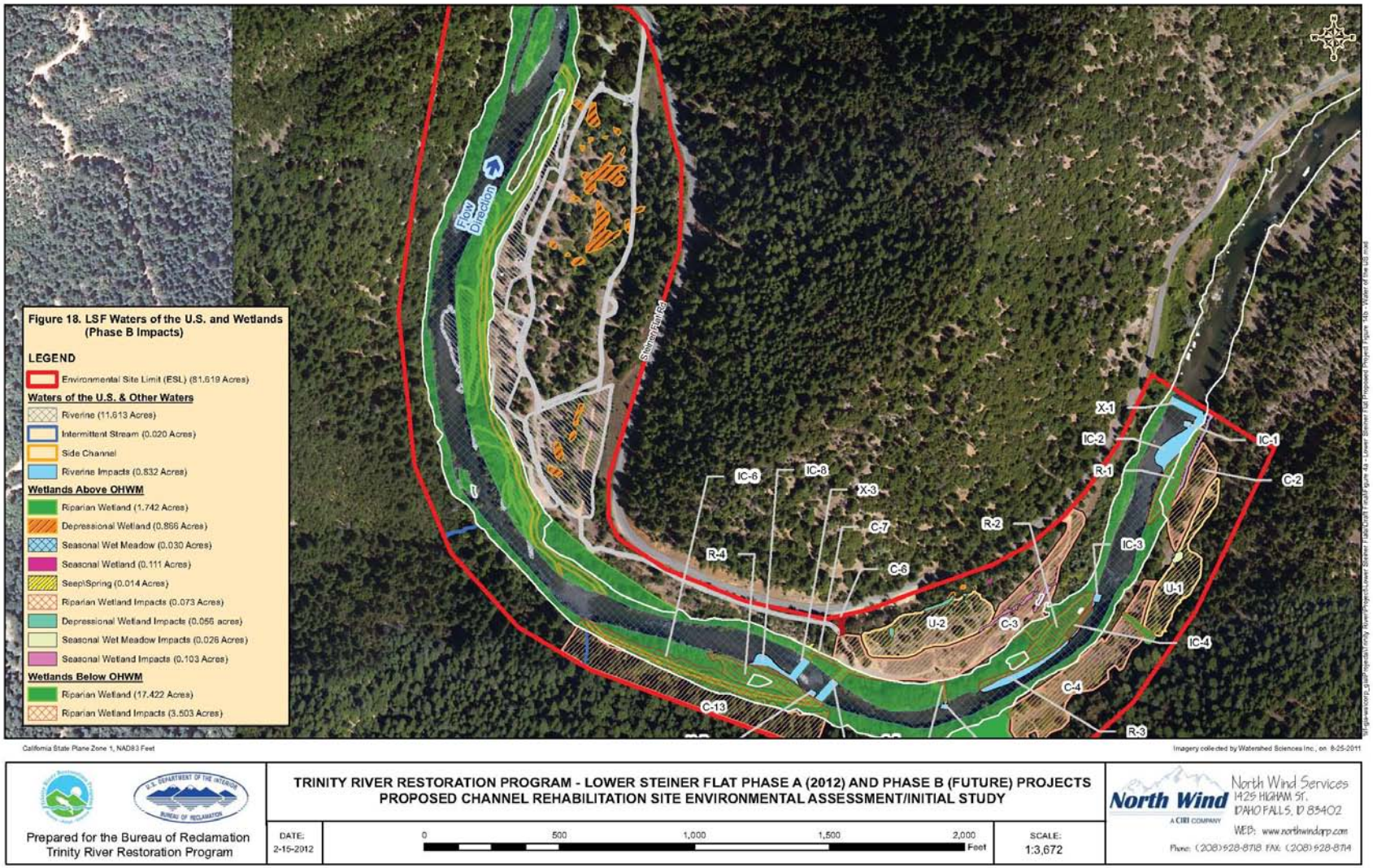


**Figure 12. Boundaries of Waters of the United States, Including Wetlands, and Potential Project Impacts, in the Lower Steiner Flat Rehabilitation Site, Phase B.**

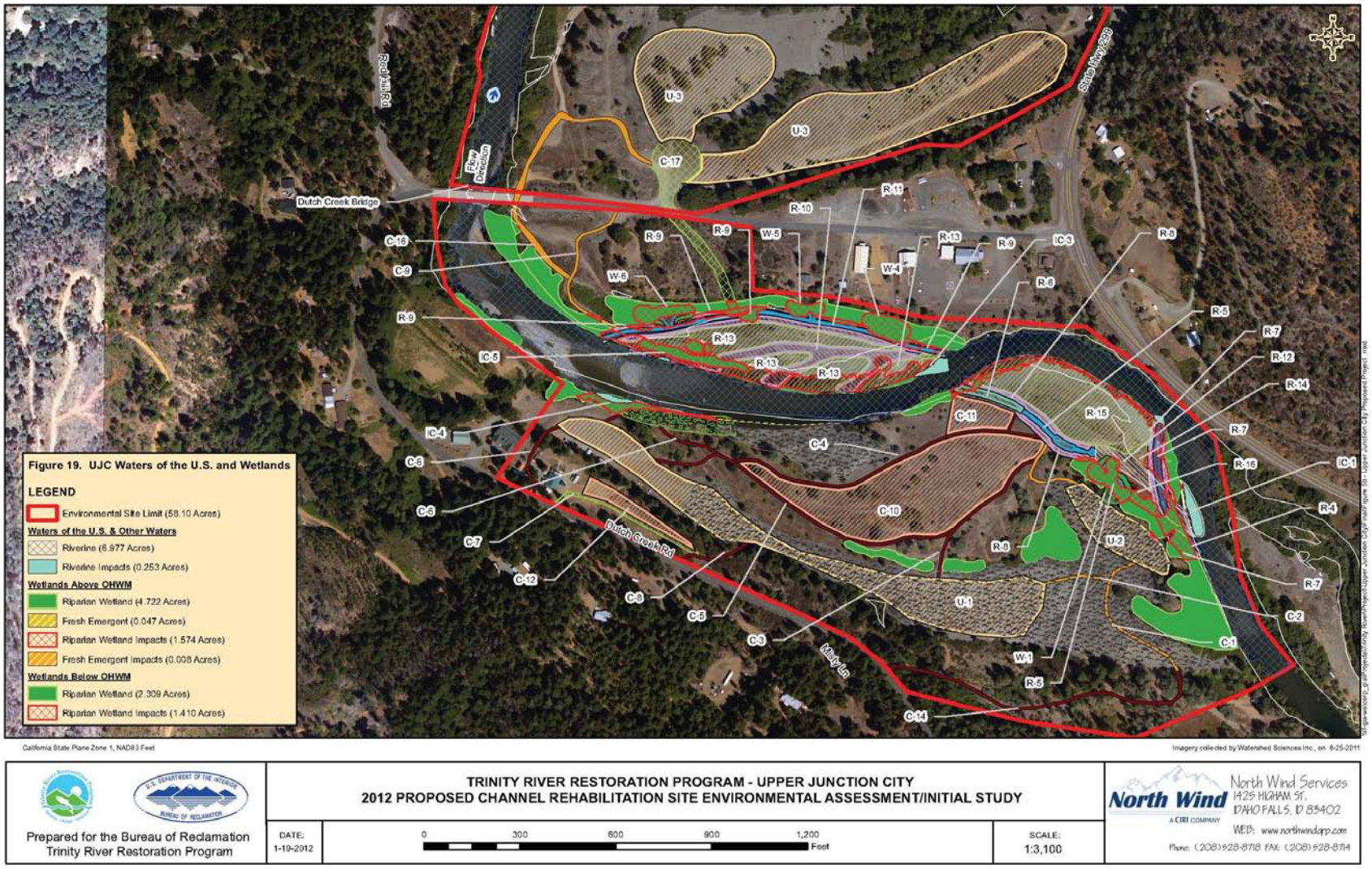


**Figure 13. Boundaries of Waters of the United States, Including Wetlands, and Potential Project Impacts, in the Upper Junction City Rehabilitation Site.**

#### RIVERINE (PERENNIAL STREAM)

The Trinity River is the primary factor influencing wetland features associated with the sites. 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.

#### INTERMITTENT STREAM

Intermittent stream features are present at Lower Steiner Flat. In general, these streams have a narrow (1 to 3 foot wide) channel, show evidence of scour and deposition, and have limited vegetation present within the channel or along the somewhat incised banks. Flow within these streams is seasonal, but thought to originate from groundwater in addition to direct precipitation events.

#### RIPARIAN WETLANDS

Riparian wetland features line the Trinity River corridor. These wetlands are characterized by a complex of open to dense emergent herbaceous and woody riparian growth. These sites include positive field indicators of wetland hydrology and hydric soils. Herbaceous plant species that almost always occur (> 99 percent probability) are designated as obligates (OBL) and herbaceous plant species that usually occur (> 67 percent probability) are designated as facultative wetland species (FACW). Common vegetation observed in riparian wetland features include: white alder (FACW[3]), Oregon ash (FACW), black cottonwood (FACW), Himalayan blackberry (FACW), California blackberry (FACW), narrow-leaved willow (OBL), arroyo willow (FACW), shining willow (NI), American dogwood (UPL), mugwort (FACW), California wild grape (FACW), torrent sedge (*Carex nudata* – FACW+), tall flatsedge (*Cyperus eragrostis* – FACW), least spikerush (*Eleocharis acicularis* – OBL), smooth scouring rush (*Equisetum laevigatum* – FACW), and reed canary grass (*Phalaris arundinacea* – OBL).

Within Lower Steiner Flat a high flow side-channel exists that begins to flow during mainstem Trinity River flows of approximately 4,500 cfs. The bank lines of the "side-channel" show indication of seasonal high flow (e.g., drift lines) that is visible in the field, however, they are predominantly vegetated by hydrophytic plants and exist below the OHWM. Consequently the side channel at Lower Steiner Flat is included within the riparian wetland acreages reported on the figures and within Table 11.

#### SEASONAL WET MEADOW

An area identified as seasonal wet meadow was located within the Lower Steiner Flat Rehabilitation Site on the terrace above the floodplain (Figure 17). The feature is in a slight depression, and was still saturated to the surface during the January field visit. This delineated feature is dominated by Santa Barbara sedge (*C. barbarae* – FACW) with other less dominant hydrophytic species such as common bog rush (*Juncus effusus* – OBL) and reed canary grass.

#### SPRING/SEEP

The spring/seep feature type is found in low abundance in the Lower Steiner Flat Rehabilitation Site. The feature appears to have water seeping from the adjacent hill slope into small wetlands. The 0.014-acre feature is cut by a small drainage and is dominated by wintercress

[3] OBL = Obligate Wetland Plants Estimated probability of occurring in wetland >99 percent
FACW = Facultative Wetland Plants Estimated probability of occurring in wetland >67 percent to 99 percent
FAC = Facultative Plants Estimated probability of occurring in wetland 33 percent to 67 percent
FACU = Facultative Upland Plants Estimated probability of occurring in wetland 1 percent to <33 percent
UPL = Obligate Upland Plants Estimated probability of occurring in wetland <1 percent
NI = No Indicator Insufficient information exists to assign a wetland status indicator

(*Barbarea orthoceras* – FACW), tall fescue, curly dock (*Rumex crispus* – FACW), and bog rush. The soils are mucky, and the feature was flooded and saturated. The feature is likely a result of subsurface water being forced to the surface by shallow bedrock, an outcropping of which is present just downslope from the feature.

#### DEPRESSIONAL WETLAND

Wetland features found within apparent mining-era excavations were labeled as depressional wetlands. This feature was present at the Lower Steiner Flat Rehabilitation Site. The vegetation community varied from what is described above for the seasonal wet meadow type. Plants observed in this wetland type include: tall fescue, curly dock, Baltic rush (*Juncus balticus* – OBL), bog rush, mugwort, reed canary grass, arroyo willow, Himalayan blackberry, and skunkbush (NI).

#### SEASONAL WETLAND

Seasonal wetlands were identified at the Lower Steiner Flat site. The seasonal wetland at Lower Steiner Flat is a series of ponded seasonal wetlands dominated by plants often found in vernal pool landscapes in the Central Valley of California. Plants observed include needle-leaf navarretia (*Navarretia intertexta* – OBL), spikerush (*Eleocharis* sp. – OBL) popcorn flower (*Plagiobothrys* sp. – FACW), seaside barley (*Hordeum marinum* – FAC), and annual hairgrass (*Deschampsia danthonioides* – FACW). This depression appears to be excavated by the river during extremely high flows; it is at the uppermost elevation of the HEC-RAS predicted OHWM. It is also affected by four-wheel drive vehicles, which appear to have deepened one of the pools in the complex.

#### FRESH EMERGENT WETLAND

Fresh emergent wetlands occur adjacent to the riverine system, in backwaters and depressions along the river, and in tailing pits that are saturated for long periods. This wetland type was present at Upper Junction City. Species present in this habitat include American tule (*Scirpus americanus* – OBL), narrow-leaved cattail (*Typha angustifolia* – OBL), dense sedge (*Carex densa* – OBL), and common spikerush (*Eleocharis macrostachya* – OBL).

### 3.7.1.5 Other Biological Resources

Migratory birds and raptors (birds of prey) may nest within, or in close proximity to, the rehabilitation sites. Migratory birds and their nests are protected under the federal Migratory Bird Treaty Act (MBTA; 50 CFR 10 and 21). Most of the birds found in the project area are protected under the MBTA. Raptors are also protected under the California Fish and Game Code. The plant communities at the project sites provide suitable breeding and foraging habitat for several raptors, such as the red-tailed hawk (*Buteo jamaicensis*) and great horned owl (*Bubo virginianus*). Table 4.7-1 of the Master EIR noted that northern spotted owl (*Strix occidentalis caurina*) habitat does not exist in the project area. At Lower Steiner Flat the habitat for northern spotted owl was evaluated and considered marginal for foraging with too few large trees and excessive undergrowth. However, because the habitat was considered adequate for dispersal, spotted owl surveys were conducted in 2011. No spotted owls were located. Riparian habitat, which is considered a sensitive natural community by the CDFG, is present in the project areas along the Trinity River. Critical Winter Range for raptors is also present in areas along the Trinity River.

## 3.7.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.7.2.1 Methodology

Methods used to assess potential impacts of the Proposed Project on vegetation and wildlife resources included a review of pertinent literature and data and field surveys. Evaluation of the presence of special-status species and sensitive habitats within the boundaries of the sites was conducted by performing a database search of the CNDDB and informally consulting with resource agencies (e.g., CDFG, NMFS, and USFWS) regarding biological resource issues associated with the implementation of rehabilitation projects along the Trinity River. These efforts provided an overview of the quality and character of potential habitat present within the project reaches.

### 3.7.2.2 Significance Criteria

Significance criteria used to analyze the potential impacts of the projects on vegetation, wildlife, and wetland resources include factual and scientific information and the regulatory standards of county, state, and federal agencies, including the CEQA guidelines. These criteria have been developed to establish thresholds to determine the significance of impacts pursuant to CEQA (Section 15064.7) and should not be confused with a "take" or adverse effect under the ESA. The Aquatic Conservation Strategy - Consistency Evaluation from Appendix A of the Master EIR is valid for the Proposed Project and included by reference.

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

- Potential to substantially reduce the number or restrict 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 the quantity or quality of riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- A conflict with any local policies or ordinances regarding protection or control of 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
- An increased 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 through direct removal, filling, hydrological interruption, or other means;
- A conflict with any state or 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.

#### 3.7.2.3 Impacts and Mitigation Measures

Table 12 summarizes the potential vegetation, wildlife, and wetlands impacts that would result from the No-Project alternative and the Proposed Project.

**Table 9. Summary of Potential Vegetation, Wildlife, and Wetland Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.7-1. Construction activities associated with the project could result in the loss of jurisdictional waters including wetlands. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-2. Implementation of the project would result in the loss of upland plant communities. | | |
| No impact | Less than significant | Not applicable[1] |

| Table 9. Summary of Potential Vegetation, Wildlife, and Wetland Impacts for the No-Project and Proposed Project Alternatives | | |
|---|---|---|
| **No-Project Alternative** | **Proposed Project** | **Proposed Project With Mitigation** |
| Impact 3.7-3. Construction of the project could result in the loss of individuals of a special-status plant species. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.7-4. Construction activities associated with the project could result in impacts to the state-listed little willow flycatcher. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-5. Construction activities associated with the project could result in impacts to foothill yellow-legged frog. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-6. Construction activities associated with the project could result in impacts to western pond turtle. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-7. Construction activities associated with the project could result in impacts to nesting Vaux's swift, California yellow warbler, and yellow-breasted chat. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-8. Construction activities associated with the project could result in impacts to nesting bald eagle and northern goshawk. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-9. Construction activities associated with the project could result in impacts to special-status bats and the ring-tailed cat. | | |
| No impact | Significant | Less than significant |
| Impact 3.7-10. Construction activities associated with the project could result in the temporary loss of non-breeding habitat for several special-status birds. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.7-11. Construction activities associated with the project could result in impacts to BLM and USFS sensitive species. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.7-12. Construction activities associated with the project could restrict terrestrial wildlife movement through the project area. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.7-13. Implementation of the project could result in the spread of non-native and invasive plant species. | | |
| No impact | Significant | Less than significant |

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

### Impact 3.7-1: Construction activities associated with the Proposed Project could result in the loss of jurisdictional waters including wetlands.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no loss of jurisdictional wetlands would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Floodplain values and functions would be enhanced by the Proposed Project in conjunction with ROD flows released by the TRD. Consequently, substantial non-riparian areas beyond those identified in pre-project plant community delineations are expected to convert to riparian habitats (in some cases, jurisdictional wetlands), both seasonal and perennial, within a three to five year post-project window. At Lower Steiner Flat, the design includes increasing the period of flow (by

building low flow side channels) through riparian wetlands, which is expected to increase functional values and wildlife habitat value. At this site, the timing and extent of wetland enhancement would be dependent on implementation of Phase B. The TRRP would take advantage of opportunities during or after a project's construction to enhance wetland functions within a site or to create conditions required for functional jurisdictional wetlands (i.e., hydrology, vegetation, and hydric soils) to persist over time. For example, excavation of areas upslope (above the OHWM) to a depth coincident with medium- or low-flow (2,000–450 cfs) conditions may provide opportunities to establish the hydrologic conditions necessary for establishing functional jurisdictional wetlands.

Construction activities associated with the Proposed Project would result in temporary impacts to jurisdictional waters, including wetland features at the rehabilitation sites. These impacts would be considered significant. Figures 17, 18, and 19 show the acres of jurisdictional waters that would be affected by the Proposed Project. Construction of Phase A of the Proposed Project at the Lower Steiner Flat site would result in a direct temporary impact to 2.458 acres of riparian wetlands, 0.177 acres of depressional wetlands, 0.103 acres of seasonal wetlands, and 0.356 riverine acres. Construction of Phase B of the Proposed Project at the Lower Steiner Flat site would result in a direct temporary impact to 3.576 acres of riparian wetland, 0.056 acres of depressional wetland, 0.026 acres of seasonal wet meadow, 0.103 acres of seasonal wetland, and 0.832 riverine acres. Construction of the Proposed Project at the Upper Junction City site would result in a direct temporary impact to 2.992 acres of riparian wetland habitat and 0.253 riverine acres. Impacts to wetlands within the U-3 spoil area at the Lower Junction City site would be avoided.

#### MITIGATION MEASURES

Construction activities associated with the project could result in the loss of jurisdictional waters including wetlands. Therefore, mitigation measures 4.7-1a, 4.7-1b, and 4.7-1c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-2: Implementation of the Proposed Project would result in the loss of upland plant communities.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to upland plant communities would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The Proposed Project would result in the temporary disturbance of upland plant communities (see Figures 15 and 16). At the Lower Steiner Flat site, impacts would occur during Phase A implementation in 2012 as well as during implementation of Phase B. While project activities would modify the contour and slope of upland areas, these areas would be subject to natural recruitment of native plants, supplemented by planting programs consistent with the TRRP vegetation management objectives including minimizing invasive species impacts and the enhancement of wildlife habitat. Over time, these upland areas would be revegetated to the degree that site conditions allow. A combination of replanting and natural revegetation would occur to ensure that upland habitat values on the Trinity River meet wildlife needs. The need for revegetation would 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 would be restored to their original condition upon completion of work. Additionally, any affected upland areas would be seeded with native plant species.

Impact 3.7-3: Construction of the Proposed Project could result in the loss of individuals of a special-status plant species.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to a special-status plant species would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Pre-construction botanical surveys have been conducted at the Lower Steiner Flat and Upper Junction City Rehabilitation Sites following protocols outlined in the Master EIR. A similar survey would be conducted at the U-3 spoil area within the boundaries of the Lower Junction City Rehabilitation Site. Any impacts to special-status plant species would be significant.

#### MITIGATION MEASURES

Implementation of mitigation measures 4.7-3a, 4.7-3b, and 4.7-3c (Appendix A) will mitigate this impact to less than significant.

Impact 3.7-4: Construction activities associated with the Proposed Project could result in impacts to the state-listed little willow flycatcher (*Empidonax traillii*).

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to the little willow flycatcher would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Suitable montane riparian habitat for the little willow flycatcher may be present at the Proposed Project sites; the species has previously been detected in the region (Wilson 1995; Miller, Ralph, and Herrera 2003; Herrera 2006). Consequently, little willow flycatchers may nest at the Proposed Project sites. Project activities (e.g., grading, vegetation removal) in montane riparian habitat may result in a temporary reduction of foraging habitat for this species. However, implementation of mitigation measures 4.6-1a, 4.6-1b, and 4.6-1c would ensure that there is no net loss of riparian habitat and a long-term increase in riparian habitat diversity. Due to the 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. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and when Phase B is implemented. 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.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in impacts to the state-listed little willow flycatcher. Therefore, mitigation measures 4.7-4a, 4.7-4b, 4.7-4c, and 4.7-4d described in Appendix A will be implemented to reduce the potential for impacts associated with

the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-5: Construction activities associated with the Proposed Project could result in impacts to the foothill yellow-legged frog (*Rana boylii*).

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to the foothill yellow-legged frog would occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

The foothill yellow-legged frog is known to occur in the Trinity River from the Lewiston Dam to the North Fork Trinity River (CDFG 2003b). Foothill yellow-legged Frog (*Rana boylii*) densities in the portion of the river near the Upper Junction City Rehabilitation Site are low. Two egg masses of foothill yellow-legged frog were observed on the downstream bar complex portion of the site in 2009 (USFWS and USBR 2011). Construction activities associated with the Proposed Project 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 would be significant. Over the long term, the Proposed Project would benefit the species through the creation of additional and higher quality habitat, such as feathered edges and backwaters that would provide habitat for early life-stages.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in impacts to the foothill yellow-legged frog. Therefore, mitigation measures 4.7-5a, 4.7-5b, 4.7-5c, and 4.7-5d described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-6: Construction activities associated with the Proposed Project could result in impacts to the western pond turtle (*Actinemys marmorata*).

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to the western pond turtle would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Riverine and riparian habitats along the Trinity River provide suitable habitat for the western pond turtle, although densities in the portion of the river near the Upper Junction City Rehabilitation Site were observed to be low (USFWS and USBR 2011). Construction activities associated with the Proposed Project 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. These impacts would be significant. However, over the long term, the project would benefit the species through the creation of additional and higher quality habitat.

For example, removal of riparian berms would improve access to potential upland nesting and overwintering sites, and the creation of side channels and alcoves with LWD would provide slow-water basking and foraging habitat.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in impacts to the western pond turtle. Therefore, mitigation measures 4.7-6a, 4.7-6b, 4.7-6c, 4.7-6d, and 4.7-6e described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-7: Construction activities associated with the Proposed Project could result in impacts to nesting Vaux's swift (*Chaetura vauxi*), California yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*).

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to nesting California yellow warblers, yellow-breasted chats, and Vaux's swifts would occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

The riparian community commonly found along the Trinity River in the vicinity of the Proposed Project sites provides suitable nesting and foraging habitat for the California yellow warbler and yellow-breasted chat. The conifer habitat in the region also provides habitat for the Vaux's swift. Consequently, project activities may result in impacts to these California Species of Special Concern. The Proposed Project may result in a temporary reduction of foraging and/or roosting habitat for these species. However, implementation of mitigation measures 4.7-1a, 4.7-1b, and 4.7-1c would ensure that there is no net loss of riparian habitat. Furthermore, project implementation would result in a long-term increase in riparian habitat diversity, increasing the quality of the habitat for the California yellow warbler and yellow-breasted chat. Due to the 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, yellow-breasted chat, or Vaux's swift. However, the removal of vegetation and the noise associated with construction activities could disturb individuals nesting on or adjacent to the sites. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and during implementation of Phase B. 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 individuals or any activities resulting in nest abandonment would be a significant impact.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in impacts to nesting Vaux's swift, California yellow warbler, and yellow-breasted chat. Therefore, mitigation measures 4.7-7a, 4.7-7b, 4.7-7c, and 4.7-7d described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-8: Construction activities associated with the Proposed Project could result in impacts to nesting bald eagle (*Haliaeetus leucocephalus*) and northern goshawk (*Accipiter gentilis*).

**NO-PROJECT ALTERNATIVE**

Under the No-Project alternative, no construction-related impacts to active raptor nests would occur because the project would not be constructed. Therefore, there would be no impact.

**PROPOSED PROJECT**

The hardwood and conifer communities commonly found along the Trinity River in the project region provide suitable nesting and foraging habitat for the bald eagle, designated by the State of California as endangered, and the northern goshawk, designated as a California Species of Special Concern. The Proposed Project may result in a temporary reduction of foraging and/or roosting habitat for these species. The R-3 element proposed during Phase B at the Lower Steiner Flat site would result in alders being pulled into the river, permanently removing that roosting habitat. Overall, as a result of the 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 bald eagle or northern goshawk. 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 bald eagles or goshawks, or any activities resulting in nest abandonment, would be a significant impact.

**MITIGATION MEASURES**

Construction activities associated with the Proposed Project could result in impacts to nesting bald eagle and northern goshawk. Therefore, mitigation measures 4.7-8a, 4.7-8b, 4.7-8c, and 4.7-8d described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.7-9: Construction activities associated with the Proposed Project could result in impacts to special-status bats and the ring-tailed cat (*Bassariscus astutus*).

**NO-PROJECT ALTERNATIVE**

Under the No-Project alternative, no construction-related impacts to breeding special-status bats or the ring-tailed cat would occur because the project would not be constructed. Therefore, there would be no impact.

**PROPOSED PROJECT**

The Trinity River riparian corridor 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. 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, bridges, caves, and mines. 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.

Noise and visual disturbances associated with construction activities may disrupt bats roosting within and directly adjacent to the project areas. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and during Phase B implementation. Further, removing large trees with cavities could result in the direct loss of colonies, which would be considered a significant impact.

Each of these bat species has the potential to forage in the rehabilitation sites. Foraging habitat typically consists of forested areas in close association with water. Construction activities associated with the Proposed Project 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 region. No long-term adverse impacts to foraging habitat associated with project implementation are anticipated.

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

#### MITIGATION MEASURES

Construction activities associated with the project could result in impacts to special-status bats and the ring-tailed cat. Therefore, mitigation measures 4.7-9a, 4.7-9b, and 4.7-9c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of these mitigation measures would reduce the impacts to less than significant.

Impact 3.7-10: Construction activities associated with the proposed project could result in the temporary loss of non-breeding habitat for special-status birds.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to non-breeding habitat for sensitive species would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The Trinity River riparian corridor provides both foraging and perching habitat for golden eagles, American peregrine falcons, and black swifts, and suitable nesting habitat may be present in some locations. Construction activities associated with the proposed project could temporarily alter the foraging patterns of these species. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance at this site could occur in 2012 and when Phase B is implemented. However, this impact would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the Proposed Project sites. No long-term adverse impacts to foraging habitat associated with project implementation are anticipated. The

loss of potential perch or nesting trees would not affect the abundance of these species or their use of the Trinity River for foraging.

Impact 3.7-11: Construction activities associated with the proposed project could result in impacts to BLM and USFS sensitive species (Pacific fisher).

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related impacts to BLM or USFS sensitive species would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Several of the special-status wildlife species with potential to occur at the sites are designated BLM or USFS sensitive species: foothill yellow-legged frog, western pond turtle, northern goshawk, little willow flycatcher, Pacific fisher, long-eared myotis bat, pallid bat, Townsend's western big-eared bat, and Yuma myotis bat. 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 den habitat is not present at the sites. Therefore, the impact would be less than significant.

#### MITIGATION MEASURES

Construction activities associated with the project could result in impacts to BLM and USFS sensitive species. Therefore, the following mitigation measures described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Mitigation measures 4.7-4a, 4.7-4b, and 4.7-4c would reduce impacts to the little willow flycatcher to a less than significant level. Mitigation measures 4.7-5a, 4.7-5b, 4.7-5c, and 4.7-5d would reduce the impacts to the foothill yellow-legged frog to a less than significant level. Mitigation measures 4.7-6a, 4.7-6b, 4.7-6c, and 4.7-6d would reduce the impacts to the western pond turtle to a less than significant level. Mitigation measures 4.7-8a, 4.7-8b, and 4.7-8c would reduce the impacts to the northern goshawk to a less than significant level, and mitigation measures 4.7-9a and 4.7-9b would reduce the impacts to special-status bat species to a less than significant level. Since no significant impacts for the Pacific fisher were identified, no mitigation is required.

Impact 3.7-12: Construction activities associated with the proposed project could restrict terrestrial wildlife movement through the project area.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, construction-related restriction of terrestrial wildlife movement through the sites would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction noise and activity would not significantly impede the seasonal migration of the Weaverville deer herd from high-elevation summer habitats to lower elevation critical winter ranges. 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. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disruption at this site could occur in 2012 and during implementation of Phase B. However, no long-term impediments to wildlife movement within the sites are anticipated as a result of implementing the Proposed Project. Therefore, this would be a less than significant impact.

Impact 3.7-13: Implementation of the proposed project could result in the spread of non-native and invasive plant species.

#### NO-PROJECT ALTERNATIVE

Under the No-Project 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. Therefore, there would be no impact.

#### PROPOSED PROJECT

Project implementation could result in the spread of non-native and invasive plant species (e.g., Himalayan blackberry, yellow star-thistle, Dalmatian toadflax, and dyer's woad) during ground-disturbing activities. This would be considered a significant impact. Implementation of the mitigation measures described below would address the potential for spread of weeds.

#### MITIGATION MEASURES

Implementation of the project could result in the spread of non-native and invasive plant species. Therefore, mitigation measures 4.7-13a, 4.7-13b, 4.7-13c, 4.7-13d, 4.7-13e, 4.7-13f, and 4.7-13g described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of these mitigation measures would reduce the impacts to less than significant. In addition, the following mitigation measures have been added to ensure that dyer's woad does not spread from the project area along the Trinity River.

- To prevent any new seed development during project activities, field visits and manual removal of dyer's woad would be necessary before and during construction. Management of the population three to five years post project would also be necessary to ensure dyer's woad does not aggressively spread after disturbance activities. Management includes field visits to monitor emergent plants and manual removal two to three times per growing season.
- In addition to mitigation measures 4.7-13d, any equipment, tools, or vehicles that have been staged on site or created ground disturbance within areas that have been identified as containing invasive plant species, would also need to be cleaned to remove dirt and vegetation that could contain weed seed or root fragments before leaving the site.
- New invasive plant infestations discovered before, during, or after project implementation would be evaluated by a qualified botanist and be either removed or avoided to prevent spread.

## 3.8 Recreation

This section describes the recreation resources within the boundaries of the Proposed Project sites and evaluates the effects of the Proposed Project on these resources. The Proposed Project's conformance with the federal and state Wild and Scenic Rivers Acts (WSRAs) is evaluated and the Wild and Scenic River Section 7 Analysis and Determination from Appendix B of the Master EIR is incorporated by reference. Recreation resources are further addressed in the Trinity River Master EIR, Section 4.8.

### 3.8.1 Affected Environment/Environmental Setting

The federal government manages about 72 percent of the land in Trinity County. BLM is the primary land manager for public lands between Lewiston Dam and the confluence of the North Fork Trinity River, including lands in the corridor of the mainstem Trinity River that comprise

portions of the Proposed Project sites. Recreational opportunities are generally available on BLM-managed lands. The Trinity River was designated as a National Wild and Scenic River in 1981. The designated Wild and Scenic reach extends from Lewiston Dam downstream to Weitchpec. Three tributaries to the Trinity River are also designated as Wild and Scenic: the New River, South Fork Trinity River, and North Fork Trinity River. Two scenic byways cross Trinity County: the Trinity Heritage Scenic Byway and the Trinity Scenic Byway. These byways provide scenic travel routes through Trinity County for residents and visitors.

The Trinity River provides year-round recreation opportunities. These opportunities include boating, kayaking, canoeing, rafting, inner tubing, fishing, swimming, wading, camping, gold panning, nature study, picnicking, hiking, and sightseeing. Fishing for chinook salmon, steelhead, and rainbow and brown trout are major recreational activities on the Trinity River throughout the year. Although instream recreational activities occur throughout the year, they are most prevalent between the months of April and February. Access to the Trinity River is available from both public and private lands, and ranges from undeveloped or primitive use areas to fully developed commercial resorts. Developed recreation areas along the Trinity River consist of private campgrounds, resorts, and lodges; public campgrounds and picnic areas; and fishing access sites. Numerous river access sites occur between Lewiston Dam and Weitchpec. Although public use is restricted at most private river access points, public agencies, including BLM, STNF, CDFG, and DWR offer a number of public river access points throughout the 40-mile reach. Public river access is not only used for a variety of water-based recreational activities, but for other activities as well, such as wildlife viewing and picnicking. River access and recreational development is concentrated around the communities of Lewiston, Douglas City, and Junction City.

Recreational opportunities are more prevalent at the Lower Steiner Flat Rehabilitation Site than at the Upper Junction City or Lower Junction City sites. Although the land within the boundary of the Lower Junction City site is private some recreational use, primarily fishing, occurs there. The Upper Junction City Rehabilitation Site is comprised primarily of private property on the left bank, with a greater proportion of BLM-managed lands on river right resulting in greater potential use of the side of the river for fishing access. On the other hand, because the Lower Steiner Flat site is comprised entirely of BLM-managed lands it offers a variety of recreational opportunities, such as camping, fishing, rafting, and swimming. The BLM's Steiner Flat campground attracts recreationists to this location, and the large boulders and bedrock in this reach create deep holes enjoyed by anglers and swimmers. The existing primitive campsite at Lower Steiner Flat on river right between RM 90.5 and 90.1 is used frequently and the day use area upstream of the campground near RM 90.75 contains a popular swimming hole and raft launch (the "Chop Tree" ramp) (CH2MHill 2011).

## 3.8.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.8.2.1 Methodology

The analysis of the potential effect on recreation resources as a result of the Proposed Project consists of identifying recreational resources (e.g., recreation facilities) near the boundaries of the sites and determining whether implementation of the action would impact these resources. This analysis is qualitative. In addition to evaluating the impacts on recreational resources, an evaluation was made of the Proposed Project's consistency with Trinity County recreation

objectives and state and federal Wild and Scenic River designations. The WSRA Section 7 Determination for the Remaining Phase 1 and Phase 2 sites is included as Appendix A of the Trinity River Master EIR.

### 3.8.2.2 Significance Criteria

Impacts associated with recreational uses would be significant if the project would:

- Conflict with established or planned recreational uses within the sites' boundaries;
- Substantially affect existing recreational opportunities; or
- Result in an increase in the use of the existing neighborhood, regional parks, public lands in general, or other recreational facilities such that substantial deterioration of these facilities would occur or be accelerated.

The following criteria were used to determine if the Proposed Project's impacts to riverine recreation would be significant:

- A substantial increase in turbidity so as to negatively affect recreation aesthetics;
- Incompatibility with the federal or state wild and scenic river designation, which is defined as jeopardizing the river's scenic, recreational, or fish and wildlife resources; or
- Non-compliance with Trinity County recreation resource objectives.

### 3.8.2.3 Impacts and Mitigation Measures

Table 13 summarizes the potential recreation impacts resulting from the Proposed Project's implementation.

**Table 10. Summary of Potential Recreation Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.8-1. Construction associated with the project could disrupt recreation activities, such as boating, fishing, and swimming, in the Trinity River. | | |
| No impact | Significant | Less than significant |
| Impact 3.8-2. Construction of the project could result in an increased safety risk to recreational users or resource damage to recreational lands within the project boundaries. | | |
| No impact | Significant | Less than significant |
| Impact 3.8-3. Construction activities associated with the project could lower the Trinity River's aesthetic value for recreationists by increasing its turbidity. | | |
| No impact | Significant | Less than significant |
| Impact 3.8-4. Implementation of the project could affect Wild and Scenic River values. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.8-1: Construction associated with the proposed project could disrupt recreation activities such as boating, fishing, and swimming in the Trinity River.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no disruption of recreation activities in the Trinity River, such as boating, fishing, and swimming, because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

During project implementation, there would be construction equipment and activity within the active river channel, the floodplain, and adjacent upland areas in close proximity to the Trinity River. Proposed activities would include vegetation removal and grading. Overall, treatments proposed within the activity areas described in Chapter 2 could result in temporary interruptions of public access and use in the immediate vicinity of the activity areas. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and when Phase B is implemented. The Lower Steiner Flat campground would be closed during the period of Phase A construction. Closure of the "Chop Tree" boat ramp in C-6 would be minimized and river access would continue to be available at other locations along the river. Other boat ramps in the area will remain open so that recreational access to the project reach will be maintained. The boat launch at the Douglas City campground that is open mid May through October will be open and the boat ramp at the Steiner Flat Feather edge area (SFF – as shown in Figure ES-1 from the Master EIR) at the first river access point downstream of Douglas City Campground will also be open during the work period. Consequently, access to boat recreation in the Lower Steiner Flat area should not be severely impacted by this work. Although potential disruptions to recreational activities within the sites would be temporary, this impact would be significant.

#### MITIGATION MEASURES

Construction associated with the Proposed Project could disrupt recreation activities such as boating, fishing, and swimming in the Trinity River and camping, particularly at the Steiner Flat campground. Therefore, mitigation measures 4.8-1a and 4.8-1b will be implemented to reduce the potential for impacts associated with the Proposed Project.

Impact 3.8-2: Construction of the proposed project could result in an increased safety risk to recreational users or resource damage to lands within the project boundaries.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no safety risks to recreational users or resource damage to lands within the project boundaries because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

During construction of the Proposed Project, there would be heavy equipment activity and construction vehicle traffic operating within, and immediately adjacent to, the Trinity River. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 as well as during implementation of Phase B. Activities associated with in-channel treatments would occur between July 15 and September 15. However, work directly adjacent to the river might continue for the duration of the construction period. Vehicular access to activity areas, including both uplands and in-channel areas, would be limited to authorized personnel.

Temporary, construction activities associated with the Proposed Project could pose a significant hazard to recreational users of the river and cause resource damage to recreational lands within the project boundaries. Potential hazards to recreationists include the operation of construction equipment and vehicles in and around the rehabilitation sites, changes in the river's subsurface movement as a result of the in-channel addition or removal of gravel, the addition of LWD into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) presented by construction equipment and vehicles operating in and adjacent to the river. Potential

hazards to resources on recreational lands within project boundaries include an increased potential for hazardous materials spills and unstable riverbanks and/or uplands resulting from excavation, material addition, road creation, and vegetation removal. These impacts would be temporary, but significant.

Post-construction, activity areas would be evaluated by Reclamation in conjunction with land managers and owners to identify specific prescriptions required to minimize any further potential safety risks to recreational users and to ensure the avoidance of any further project effects to resources occurring on recreational lands within the project boundaries.

#### MITIGATION MEASURES

Construction of the Proposed Project could result in an increased safety risk to recreational users or resource damage to lands within the project boundaries. Therefore, mitigation measures described above for Impact 3.8.1 will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.8-3: Construction activities associated with the proposed project could lower the Trinity River's aesthetic values for recreationists by increasing its turbidity.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, turbidity levels in the Trinity River would not increase because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Implementation of the Proposed Project could increase turbidity in the Trinity River for some distance downstream. The level of this increase would largely be dependent on the flow regime at the time of the project. Flows that typically contribute to good fishing tend to be clear thus, nominal increases in turbidity may affect the recreational experience of anglers and the aesthetic values held by other user groups. Water quality objectives for the Trinity River specifically prohibit the discharge of any materials into the river that could cause a nuisance or adversely affect beneficial uses (e.g., recreation).

The Regional Water Board's Basin Plan (North Coast Regional Water Quality Control Board 2007) includes two specific prohibitions directed at construction, logging and other associated non-point 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.

Implementation of the Proposed Project would increase the potential for turbidity and total suspended solids during construction activities. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. Fine sediments could be suspended in the river for several hours following in-channel 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 could be carried several thousand feet downstream of the activity area, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit. Increased turbidity and suspended solids levels would adversely affect water quality (refer to Section 4.5, Water Quality, of the Trinity River Master EIR) and could adversely affect anadromous fish species that are known to occur in the Trinity River (refer to Section 4.6, Fisheries Resources, of the Trinity River Master EIR), and could have a noticeable effect on the river's aesthetics. Increases in turbidity would be a significant impact.

#### MITIGATION MEASURES

Construction activities associated with the proposed project could lower the Trinity River's aesthetic values for recreationists by increasing its turbidity. Therefore, the mitigation measures 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, and 4.5-1e identified to protect water quality and described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of these mitigation measures would reduce the impacts to less than significant.

Impact 3.8-4: Implementation of the proposed project could affect Wild and Scenic River values.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no adverse impacts to Wild and Scenic River values because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction and implementation of the Proposed Project would have a temporary effect on the scenic and recreational components of the Trinity River's Wild and Scenic River values. However, this temporary impact would be less than significant because the rehabilitation activities would ultimately enhance the overall form and function of the Trinity River, thereby enhancing the outstandingly remarkable values for which it was designated a Wild and Scenic River. Temporary impacts on the scenic quality of the river are previously discussed under Impact 3.8-3 and in Section 3.12 (Aesthetics). The impact on Wild and Scenic River values would be less than significant because project activities would be temporary and would ultimately enhance the "natural" qualities of the river.

## 3.9 Socioeconomics

This section evaluates potential impacts on socioeconomic conditions, population, and housing from project implementation at the Proposed Project sites. This section is tiered to the detailed discussion of regional socioeconomic conditions, population, and housing in the Trinity River Master EIR (Section 4.9) as well as additional information for the Phase 1 sites contained in Section 7.9. Information regarding poverty rates and population by race and ethnicity is included in Section 3.18, Environmental Justice. Much of the information in this section is derived from Trinity County 2007: Economic and Demographic Profile (Center for Economic Development 2007). Trinity County is a rural region with substantial amounts of public land and a minimal private land base. As a result, the region is largely dependent on natural resources and recreation-based industries for its economic base.

## 3.9.1 Affected Environment/Environmental Setting

### 3.9.1.1 Labor Market, Population, and Housing

The labor market, population, and housing discussions in the Trinity River Master EIR (Section 4.9) provide general information that applies to the Proposed Project sites.

#### LABOR MARKET

The average total labor force in Trinity County between the years of 1991 and 2006 was 5,250 people (California Employment Development Department 2008; Center for Economic Development 2007). Annual variations have ranged from 4,850 people in 1999 to 5,420 people in 2003 (California Employment Development Department 2008; Center for Economic Development 2007). The majority of Trinity County's labor force is concentrated in Weaverville and Hayfork. Trinity County's unemployment rate has been and continues to be consistently higher than the California average. In December 2010 unemployment in Trinity County was 20.5 percent (California Employment Development Department 2011).

#### POPULATION

Trinity County's population continues to grow at a considerably lower rate than California on average, and was ranked by the U.S. Census Bureau as 54th in total population out of 58 California counties (U.S. Census Bureau 2008). Declines in the timber industry and an attendant loss of jobs have had a significant effect on the county's population.

The population of Trinity County is generally characterized by a higher proportion of white and retirement-age persons and lower proportions of Native American, Hispanic, and young working-age persons (Center for Economic Development 2007). The county's demographics are influenced by the large amount of federally owned land in combination with land used for private industrial timber production (10 percent), much of which is restricted from development due to zoning as a Timber Production Zone (Trinity County 2003). Thus, only about 15 percent of the county is private land usable for development purposes. The county's rugged terrain and remote location also influence its demographics by limiting the developable area. Most of the population of Trinity County is concentrated in Weaverville, Hayfork, and Lewiston. Education levels of residents are typical of most rural northern California counties, with a greater proportion of high school graduates and a smaller proportion of college graduates (Center for Economic Development 2007).

#### HOUSING

The total number of housing units in Trinity County in 2006 is estimated at 8,251 (U.S. Census Bureau 2008). The total number of occupied housing units is estimated at 5,587 (U.S. Census Bureau 2008). During the period of 2000 to 2007, there were 374 single family homes constructed in Trinity County; only two of these were multifamily units (California Employment Development Department 2008). The community of Junction City offers limited services, including several commercial enterprises, a USFS work station, a U.S. Post Office, and Junction City Elementary School. This community has two commercial sand and gravel operations, as well as several recreation-based businesses, which include RV parks, lodges, and rafting and fishing guides that operate along the Trinity River between Lewiston and Big Bar. The community of Douglas City also offers limited services, including several commercial enterprises, a U.S. Post Office, a water treatment plant, and Douglas City Elementary School. The community has several recreation-based businesses including Douglas City Campground, Trinity Island Resort, Indian Creek Trailer and RV Park, Indian Creek Lodge, and Trinity River Outfitters. These businesses provide economic

benefits to local communities and the county; however, the communities are primarily residential.

There is little likelihood that parcels in the vicinity of the Proposed Project sites would be further subdivided because of their location in the floodplain, zoning restrictions, soil conditions, and minimal county services (e.g., community water service). Zoning designations within the communities of Junction City and Douglas City are largely residential, with minimum parcel sizes ranging from 1 to 40 acres (Trinity County 2003). The Rural Residential zoning requires a minimum parcel size of 1 to 5 acres to retain the rural character of the area. In addition, portions of many parcels located directly adjacent to the river are designated as Flood Hazard and Open Space zones, restricting further development in these areas. Therefore, there is little potential for increased development densities in and around the rehabilitation sites. BLM-managed public lands in and adjacent to the Proposed Project sites are primarily managed for resource and recreation uses, and planned development would need to be consistent with resource and recreation goals and objectives of agency management plans.

## 3.9.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.9.2.1 Methodology

The following section provides a brief overview of the analytic methods used to assess the potential socioeconomic impacts of the Proposed Project. These methods included qualitative assessments of potential impacts associated with employment, income, conflicts with county and local plans, population growth, displacement of persons and businesses, and community disruption. For this assessment, Trinity County is considered to be the area of potential socioeconomic impact.

### 3.9.2.2 Significance Criteria

For purposes of CEQA, under which "economic or social impacts of the Proposed Project shall not be treated as significant impacts on the environment," impacts on population and housing are relevant only if they either (i) directly relate to an impact on the physical environment, in which case a lead agency may, but need not, consider economic or social impacts in determining whether such physical impacts are significant, or (ii) would result in a reasonably foreseeable indirect impact on the physical environment (See CEQA Guidelines, § 15131). Under CEQA, the Proposed Project would have a significant impact on population and housing if it:

- Induces substantial growth in an area, either directly or indirectly;
- Displaces substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and/or
- Displaces substantial numbers of people, necessitating the construction of replacement housing elsewhere.

### 3.9.2.3 Impacts and Mitigation Measures

Table 14 summarizes the potential socioeconomic impacts that could result from implementation of the No-Project alternative and the Proposed Project.

| Table 11. Summary of Potential Impacts on Socioeconomics for the No-Project and Proposed Project Alternatives | | |
|---|---|---|
| **No-Project Alternative** | **Proposed Project** | **Proposed Project With Mitigation** |
| 3.9-1. Construction of the project would provide temporary employment opportunities for construction workers in Trinity County. | | |
| No impact | Beneficial | Not applicable[1] |
| 3.9-2. Implementation of the project could result in the disruption or displacement of local businesses. | | |
| No impact | Less than significant | Not applicable[1] |
| 3.9-3. Implementation of the project would result in an increased demand for housing during construction. | | |
| No impact | Less than significant | Not applicable[1] |
| 3.9-4. Implementation of the project would result in concentrated population growth. | | |
| No impact | Less than significant | Not applicable[1] |

[1] Because this potential impact is beneficial or less than significant, no mitigation is required.

Impact 3.9-1: Construction of the proposed project would provide temporary employment opportunities for construction workers in Trinity County.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no employment opportunities would be created because the project would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

Project implementation would generate temporary construction-related employment in Trinity County. The generation of employment would be a beneficial effect in the local economy, even if the employment is short-lived. The exact number of design, construction, and clerical positions required to complete the Proposed Project is undetermined, but implementation of the rehabilitation activities is expected to add a small percentage to existing local jobs for the project duration. The duration of employment would be dependent on the length of the contracting and construction period (anticipated to be approximately six months). Because activities at the Lower Steiner Flat site would occur in two phases there would be two periods of construction-related employment, one in 2012 and one when Phase B is implemented. Although the Proposed Project would provide direct local employment opportunities only if workers are hired from the local labor force, this potential impact would be beneficial.

Impact 3.9-2: Implementation of the proposed project could result in the disruption or displacement of local businesses.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no disruption or displacement of local businesses would take place because the project would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

Local businesses in the vicinity of the sites would not be disrupted or displaced by activities associated with the Proposed Project. Construction equipment and vehicle access would not impair access to local businesses, and business operations would not be impaired. Businesses that operate on the river, such as rafting and fishing guides, could be affected by a lack of access at the Lower

Steiner Flat site because the existing river access point at this location would not be available for a period of time. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and when Phase B is implemented. However, because numerous other locations are available in the vicinity of this site, the impact would be less than significant.

Impact 3.9-3: Implementation of the proposed project would result in an increased demand for housing during construction.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no increased demand for housing during construction would take place because the project would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

The area surrounding the communities of Junction City and Douglas City are primarily rural residential areas, and few rental opportunities are available. What rental property does occur in adjacent rural residential areas is typically seasonal rental property available for recreational users. More readily available short-term apartment and single-family rentals are concentrated in the nearby community of Weaverville and, to a lesser degree, Hayfork.

Implementation of the Proposed Project would not result in the displacement of any individual from his or her home. It is not anticipated that any short-term increase in the demand for housing in Weaverville would occur as a result of construction workers seeking lodging during the project staging and construction period (primarily July through October) for the Proposed Project. Based on the estimated increase in annual employment generated by the project (approximately 20 to 30 persons for the whole project as described in the Trinity River Master EIR), this would be a less than significant impact, both regionally and locally. In addition to accommodating the short-term demands for housing during previous TRRP rehabilitation projects, the nearby communities have been capable of meeting short-term increases in housing demands resulting from a large influx of fire suppression personnel on a recurring basis. These projects would generate a much smaller number of housing needs in comparison to the housing demands generated by wildland fires, and the impact would occur only in the short term. Therefore, the impact would be less than significant.

Impact 3.9-4: Implementation of the proposed project would result in concentrated population growth.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no population increases would occur because the project would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

The Proposed Project would require about 20 to 30 individuals during implementation. Because activities at the Lower Steiner Flat site would occur in two phases, the potential disturbance could occur in 2012 and when Phase B is implemented. An increase in population is not anticipated; if any increase were to occur it would likely occur on a temporary basis. Based on current populations in the local communities, the projected number of workers that could move to the greater Weaverville area would result in a localized increase of less than one percent on a temporary basis. This amount would not constitute a significant change in population. Workers

would likely be drawn from the local work force, which would further lessen population growth associated with the project implementation. Overall, this impact would be less than significant.

## 3.10 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Officer, to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The CEQA is the primary State statute that guides cultural resources considerations for actions involving State or local agencies. Similar to the NHPA the CEQA process seeks to identify cultural resources that are significant and are eligible for inclusion in the California Register of Historical Resources (CRHR) (PRC, Section 21084.1). The guidelines for considering impacts to cultural resources under CEQA are located in the CEQA guidelines Section 15064.5. If actions result in significant and unavoidable impacts to resources eligible for inclusion in the CRHR, these effects must be mitigated through prescribed procedures. According to the CEQA guidelines if a cultural resource is eligible for inclusion in the NRHP it is eligible for inclusion on the CRHR and a means of mitigating significant and unavoidable impacts under CEQA can be to resolve adverse effects to historic properties using the Section 106 process. General mitigation measures are provided in Appendix A and would be incorporated into a Memorandum of Agreement (MoA) to resolve Adverse Effects to historic properties assuming such impacts are adverse or significant and unavoidable. By completing the Section 106 process you effectively satisfy all the steps and considerations for impacts to cultural resources for CEQA.

The TRRP is guided by a Programmatic Agreement (PA) executed between Reclamation and the SHPO in 2000 (USFWS et al. 2000b). The PA outlines an alternative Section106 process as allowed for in the Section 106 regulations at §800.16. The PA outlines a program APE which includes the 100 year flood plain of the Trinity River, access roads, staging, and all TRRP project related activities. Specific actions can result in more refined action specific project areas. Additionally, the PA provides for a streamlined review process on actions that have minimal to no impact on Historic Properties. Reclamation is required to report annually to the SHPO on TRRP actions and

undertakings. If an action or undertaking is determined to have an adverse effect to historic properties Reclamation must seek to resolve that adverse effect through avoidance, project modification, or mitigation through an MOA. By resolving effects to Historic Properties, impacts to cultural resources are effectively mitigated to less than significant under CEQA and no impact under NEPA.

## 3.10.1 Affected Environment/Environmental Setting

Trinity County was primarily shaped by three economic pursuits: ranching, logging, and mining. Early settlers during the 1840s farmed, logged, and milled lumber (Colby 1982; Cox 1958; Medin and Allen 1998). This lifestyle was disrupted by the discovery of gold in Trinity County at Reading Creek in 1848. Mining on the Trinity River was a significant industrial operation that contributed to the economic development of Trinity County beginning in the 1890s and continuing to the 1960s (Bradley 1941; Jones 1981; Medin and Allen 2007). Boom towns quickly sprang up throughout the basin, with Weaverville and Trinity Center being among the largest, and nearly every flat and bar along the river was subsequently prospected.

Evidence of mining is easily identified by even the casual observer. Large dredge tailings created by multiple gold dredge operations line the banks of the Trinity River depicting various stages of dredge development and implementation. Remnant placer mine operations also mark the hillsides along with their supporting infrastructure such as roads and ditches that brought people, equipment, and water to the gold operations. The largest of the placer mining operations was Union Hill Mine supported by the Union Hill Ditch. Mining activities are dominant through the TRRP APE as well as the project areas at Upper Junction City and Lower Steiner Flat. Although it is known that Native Americans utilized the lands in and immediately adjacent the Trinity River, evidence of this use is not easily located within the TRRP APE. Archaeological sites containing Native American type artifacts are rare within the TRRP APE and have not been identified during the course of implementing Phase I actions associated with the TRRP.

### 3.10.1.1 Upper Junction City

Similar to much of the TRRP APE, the Upper Junction City project location has evidence of mining along the Trinity River. As the project area is located adjacent the Trinity River, regular flooding appears to have taken its toll on the much of the landscape. This combined with secondary use of the mining remains such as gravel extraction have left the Upper Junction City project area little to nothing of cultural significance. The area currently depicts a relatively leveled, highly disturbed landscape.

### 3.10.1.2 Lower Steiner Flat

Lower Steiner Flat is currently used by the BLM as a recreation area and campground. Rafts and boats regularly use the area to launch from. In the boat launch area, there is limited evidence of historic land use. Mining activities in this area appear to have been modified by river flooding but a few visible remnants are still present such as a rock-lined drainage, cabin pad of an old residence, and some small dredge activities. Down river at the BLM campsite, river flooding has taken its toll but to a lesser extent than the resources up-river at the boat launch area. Large tailings piles and mining equipment are visible within the campground. On the left side of the river at Lower Steiner Flat, fruit trees of various varieties are present and are estimated to be around 100 years old or

older. In that same area is evidence of residential use estimated to have occurred between the late 19th century though 1970s. Because of a terrace on the left side of the Trinity River the cultural resources on the left side of the river appear to be less impacted by river flooding than those on the right side of the river. Although actions were once considered on the left side of the river at Lower Steiner Flat, these ideas have since been abandoned limiting proposed activities on the right side of the river.

## 3.10.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.10.2.1 Impacts and Mitigation Measures

Table 15 summarizes the potential cultural resource impacts resulting from construction of the project.

**Table 12. Summary of Potential Cultural Resources Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.10-1: Implementation of the project could cause a substantial adverse change in the significance of a known cultural resource. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.10-2: Implementation of the project could potentially result in disturbance of undiscovered prehistoric or historic resources. | | |
| No impact | Potentially significant | Less than significant |

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

Impact 3.10-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a known cultural resource.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no effects on cultural resources because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Implementation of the proposed project will effectively avoid, minimize or mitigate impacts to cultural resources as described in the PA. By following the stipulations of the PA, there will be no impacts to cultural resources and all actions under CEQA and NHPA will be fulfilled. Reclamation commits to fulfilling the Stipulations of the PA prior to implementation of the Proposed Project.

Impact 3.10-2: Implementation of the proposed project could potentially result in disturbance of undiscovered prehistoric or historic resources.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no effects on cultural resources because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

TRRP rehabilitation activities have the potential to affect unknown cultural resources that may be present at the Proposed Project sites. In the event that any cultural resources or human remains are encountered during project implementation, all work in the area of the find would halt and Reclamation's Regional Archeologist would be immediately notified. Reclamation would follow

the stipulations of the PA and appropriate laws and regulations for compliance with the NHPA and other cultural resources statues. If the discovery is determined to be a historic property that would be adversely affected by the rehabilitation activities, Reclamation would resolve the adverse affect by preparing a Historic Property Treatment Plan in accordance with Section III (d) of the PA. If human remains are discovered and identified as Native American, they would be treated according to provisions set forth in Section IV of the PA as well as the Native American Graves Protection and Repatriation Act. Any such impact related to the Proposed Project would be potentially significant.

#### MITIGATION MEASURES

Implementation of the Proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources. Therefore, mitigation measures 4.10-2a and 4.10-2b described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

## 3.11 Air Quality

This section evaluates the air quality impacts associated with implementation of the Proposed Project. Air emissions from project activities are measured against federal and state standards. Air quality in the vicinity of the Proposed Project sites is discussed in detail in the Trinity River Master EIR (Section 4.11.1). The information below is summarized from that document.

### 3.11.1 Affected Environment/Environmental Setting

#### CLIMATE AND TOPOGRAPHY

Trinity County has a climate characterized by hot, dry summers and cold, moderately wet winters (USDA 1998). Most precipitation in the county results from major storms originating in the Pacific Ocean; however, short thunderstorms resulting from localized climate conditions occur in the summer months. The higher mountain ridges receive precipitation as snow and hold most of it until late spring. Precipitation in the lower elevations is dominantly rainfall, with occasional snow in the winter (North Coast Unified Air Quality Management District 1995). Trinity County has an average summer high temperature of 93.9°F and winter low of 27.3°F.

#### AIR QUALITY

The Trinity River Master EIR summarizes federal, state and local air quality requirements applicable to the project area. The 1977 federal Clean Air Act (CAA) requires the EPA to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. Trinity County is part of the North Coast Air Basin (NCAB), and is under the jurisdiction of the North Coast Unified Air Quality Management District (NCUAQMD). Similar to federal requirements, the 1988 California Clean Air Act (CCAA) outlines a program to attain the California Ambient Air Quality Standards (CAAQS). The county is currently in attainment with all federal air quality standards and most state air quality standards; however, the county is in non-attainment for the state particulate matter standards for particulate matter less than 10 microns in diameter ($PM_{10}$). The California Air Resources Board (CARB), California's state air quality management agency, regulates mobile source emissions and oversees the activities of the NCUAQMD. The NCAB is comprised of five counties in northwest California: Del Norte, Humboldt, Trinity, Mendocino, and a portion of Sonoma County. NCUAQMD is responsible for monitoring and reporting air quality for Trinity County as well as two others.

Trinity County's air quality is generally good. The low population density, limited number of industrial and agricultural operations and minimal traffic congestion problems contribute to the good air quality. Ambient air quality data is available from the Weaverville air monitoring station, which is located approximately 8 miles from the Upper Junction City and Lower Junction City Rehabilitation Sites and 6 miles from the Lower Steiner Flat Rehabilitation Site. Air quality measured at the Weaverville station may not be a precise representation of ambient air quality in the immediate vicinities of the sites but it does provide a good indication of air quality in the general vicinity.

#### CLIMATE CHANGE AND GREENHOUSE GASES

Climate change refers to a significant change in measures of climate, such as average temperatures, precipitation, and wind patterns, over time. Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, attributed to the accumulation of greenhouse gas (GHG) emissions in the atmosphere.

As of August 2007, CEQA lead agencies are required by law to analyze the potential of a project to produce GHG emissions, which consist primarily of carbon dioxide ($CO_2$), nitrous oxide ($N_2O$), and methane ($CH_4$) (Public Resources Code Section 21083.05). The Governor's Office of Planning and Research released a Technical Advisory in June 2008 (California Office of Planning and Research 2008) that provides guidance for addressing CEQA GHG environmental impacts. In particular, "Lead agencies should make a good faith effort, based on available information, to calculate, model, or estimate the amount of $CO_2$ and other GHG emissions associated with vehicular traffic, energy consumption, water usage and construction activities" (California Office of Planning and Research 2008).

#### SENSITIVE RECEPTORS

A sensitive receptor is a location where human populations, particularly children, seniors, and sick individuals, are present and where there is a reasonable expectation of continuous human exposure to pollutants. The projects are not located near a hospital or senior housing. However, the Upper Junction City and Lower Junction City sites are near the elementary school in Junction City and the Lower Steiner Flat site is near the elementary school in Douglas City. Additionally the Upper Junction City site has residential areas within and adjacent to the site boundaries and all three sites provide recreation opportunities.

## 3.11.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.11.2.1 Methodology

Data for the impacts analysis were taken from the following reports on local and regional air quality: Particulate Matter Attainment Plan (North Coast Unified Air Quality Management District 1995), California Air quality data statistics (California Air Resources Board 2008), North Coast Rules and Regulations (North Coast Unified Air Quality Management District 2005), and the Trinity County General Plan (Trinity County 2003). The air quality analysis is qualitative, and was conducted by assessing anticipated construction-related impacts of the projects and comparing them to existing and anticipated future air quality conditions.

### 3.11.2.2 Significance Criteria

According to Appendix G of the CEQA Guidelines, a project would normally have an adverse impact on air quality if it would:

- Violate any ambient air quality standard;
- Contribute substantially to an existing or projected air quality violation;
- Conflict with or obstruct implementation of any applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant (e.g., $PM_{10}$) for which the region is in non-attainment under an applicable state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in substantial air emissions or deterioration of air quality;
- Create objectionable odors;
- Alter air movement, moisture, or temperature, or result in any change in climate, either locally or regionally;
- Produce toxic air contaminant emissions that exceed the air pollution control district's threshold level for health risk; or
- Result in a substantial increase or cumulatively considerable net increase in GHG emissions (e.g., $CO_2$).

Since the first two criteria include violation of either federal or state air quality standards, these criteria would also be used to determine significance for NEPA compliance. The NCUAQMD has not formally adopted a CEQA threshold of significance for criteria pollutants such as CO, $NO_x$, $PM_{10}$, and $SO_2$, but does use the significant emission rates listed in Table 4.11-3 of the Trinity River Master EIR as a baseline when evaluating a project's potential impacts to air quality.

### 3.11.2.3 Impacts and Mitigation Measures

Table 16 summarizes the potential air quality impacts that would result from the No-Project alternative and the Proposed Project.

**Table 13. Summary of Potential Air Quality Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| 3.11-1. Construction activities associated with the project could result in an increase in fugitive dust and associated particulate matter ($PM_{10}$ and $PM_{2.5}$) levels. | | |
| No impact | Significant | Less than significant |
| 3.11-2. Construction activities associated with the project could result in an increase in construction vehicle exhaust emissions. | | |
| No impact | Significant | Less than significant |
| 3.11-3. Construction activities and removal of vegetation associated with the project could result in vegetative materials that managers may decide to burn. | | |
| No impact | Significant | Less than significant |
| 3.11-4. Construction and transportation activities associated with the project could result in an increase of greenhouse gas emissions and effects on climate change. | | |
| No impact | Less than significant | Not applicable[1] |
| 3.11-5. Construction activities would generate short-term and localized fugitive dust, gas, and diesel emissions, and smoke that could affect adjacent residences and schools. | | |
| No impact | Significant | Less than significant |

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

Impact 3.11-1: Construction activities associated with the proposed project could result in an increase in fugitive dust and associated particulate matter ($PM_{10}$ and $PM_{2.5}$) levels.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no construction-related increase in fugitive dust and associated particulate matter levels because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Rehabilitation activities associated with the Proposed Project would require excavation, grading, disposal of earthen materials, and the use of heavy equipment and travel on unpaved roads, which would temporarily contribute fugitive dust in the project area. Fugitive dust emissions would also result from activities associated with vegetation removal and gravel injection. As discussed previously, these sources of fugitive dust are associated with $PM_{10}$, a criteria pollutant, for which the air basin is in non-attainment.

High levels of $PM_{10}$ in Trinity County generally coincide with regional wildland fire events during the dry summer months and with periods of cool, wet weather when localized woodstove use and brush burning activities contribute particulate matter to the air. Fugitive dust resulting from project activities would occur during the dry summer and early fall months, when $PM_{10}$ levels may be elevated by wood stove use, brush burning, or wildland fires.

As described in Appendix A, the project includes NCUAQMD-required measures to minimize fugitive dust in and adjacent to the rehabilitation sites. Once rehabilitation activities cease at the sites, the resulting impact on air quality would also cease. While the project design minimizes fugitive dust, project generated fugitive dust would be considered a significant impact because the air basin is in non-attainment status for particulate matter. The impact would be temporary (during rehabilitation). Because activities at the Lower Steiner Flat site would occur in two phases, the potential increase in fugitive dust could occur in 2012 and when Phase B is implemented.

#### MITIGATION MEASURES

Construction activities associated with the project could result in an increase in fugitive dust and associated particulate matter ($PM_{10}$ and $PM_{2.5}$) levels. Therefore, mitigation measure 4.11-1a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Impact 3.11-2: Construction activities associated with the proposed project could result in an increase in construction vehicle exhaust emissions.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no increase in construction vehicle exhaust emissions would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction associated with the Proposed Project would require the use of equipment that would temporarily contribute to air pollution in the Trinity River Basin. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B. Exhaust emissions from heavy equipment during construction could contribute to air pollution.

Project construction activities would generate emissions from diesel- and gasoline-powered equipment and vehicles. Diesel particulate is an identified Hazardous Air Pollutant (HAP) and Toxic Air Contaminant (TAC), emissions of which should be minimized. In this regard, construction activities would require the contractor to comply with NCUAQMD Rule 104 (3.0) Particulate Matter or use portable internal combustion engines registered and certified under the state portable equipment regulation. Because diesel particulate matter is both a HAP and a TAC, and because these pollutants would be emitted as a result of project implementation, the Proposed Project would have a significant impact on air quality.

#### MITIGATION MEASURES

Construction activities associated with the Proposed Project could result in an increase in construction vehicle exhaust emissions. Therefore, mitigation measure 4.11-2a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Impact 3.11-3: Construction activities and removal of vegetation associated with the proposed project could result in vegetative waste materials that managers may decide to burn.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no vegetative waste materials that would need to be burned because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Implementation of the Proposed Project would include vegetation removal resulting in vegetative material that would be buried, piled to create wildlife habitat, chipped, or burned. Though vegetative materials are most frequently chipped and added back to the floodplain or upland area to enhance growing conditions, occasionally burning of vegetation (e.g., weedy materials) is completed. Piling and burning is a quick and economical way to eliminate flammable biomass and reduce concentrations of wildland fuels. Brush piles set aside for burning would be left intact until site construction is finished, and subsequently burned under the direction of Reclamation, consistent with BLM and Cal Fire requirements. Burning vegetation in the fall/winter period (November-April) would eliminate effects to nesting birds. In the event that piles are burned, smoke would temporarily contribute to air pollution in the Trinity River Basin. Burning vegetation would contribute particulate matter to the air, a criteria pollutant for which the basin in is non-attainment. Therefore, the impact would be significant.

#### MITIGATION MEASURES

Construction activities and removal of vegetation associated with the project areas could result in vegetative waste materials that managers may decide to burn. Therefore, mitigation measures 4.11-3a, 4.11-3b, and 4.11-3c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.11-4: Construction and transportation activities associated with the proposed project could result in an increase of greenhouse gas emissions and effects on climate change.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Transportation and construction activity associated with project implementation would generate GHG emissions from diesel- and gasoline-powered vehicles and equipment. Burning vegetation would also emit $CO_2$, which is a GHG. Several measures are identified in Appendix A that are intended to reduce the impacts relative to climate and GHGs. These measures are incorporated into the Proposed Project. Additionally, the following measures would be used to enhance the awareness of global warming in conjunction with the Proposed Project:

- Provide project contractors with educational material about fuel efficiency and incentives;
- Promote incentives for contractors to initiate ride-sharing programs;
- Promote the use of energy efficient and alternative fuel construction equipment and transportation fleets through contract incentives;
- Require contractors to provide recycling bins for on-site waste materials;
- Provide incentives for contractors to use re-usable water containers rather than plastic bottled water;
- Provide incentives for contractors to hire locally;
- Require re-useable batteries for equipment that can use them.

In order to determine the significance of the impact of a rehabilitation project, a "carbon foot-print" was estimated in the Trinity River Master EIR based on a project's potential generation of GHGs (primarily $CO_2$) from project activities at the remaining Phase 1 sites. Project activities that would offset potential impacts were weighed into the equation. The analysis in the Trinity River Master EIR determined that rehabilitation at all of the remaining Phase 1 sites would produce approximately 3 metric tons of $CO_2$ per day over the life of the project. Total GHG emissions resulting from the proposed activities would be approximately 2,050 metric tons of $CO_2$.[4] Vegetation replanting and natural re-seeding within the existing riparian area would offset the total project GHG emissions by approximately 20 metric tons of $CO_2$ over a five-year period. Additionally, project activities may result in opportunities to increase the amount of riparian and upland vegetation.

Based on those calculations, the Trinity River Master EIR determined that rehabilitation at the remaining Phase 1 sites would not generate significant increases in GHGs or an ongoing increase in the demand for off-site energy production because there would be no new facilities constructed. While a project's GHG emissions associated with the use of heavy equipment would be measurable over the course of the project, GHG emissions and any effects on global climate change would not be cumulatively significant considering the amount of GHG emissions generated by the rehabilitation and the current local air quality conditions. Overall, the impacts of rehabilitation activities would be less than significant with respect to GHG. As a result, the Proposed Project would result in impacts that would be less than significant because it represents a much smaller action than that analyzed in the Trinity River Master EIR.

[4] The mobile combustion $CO_2$ Emissions Calculation Tool was used to calculate GHG emissions for combustible fuel (Greenhouse Gas Protocol Initiative 2005), and the Construction Carbon Calculator was used to calculate GHG emissions for vegetation loss (BuildCarbonNeutral 2007). The calculation is based on 23 days of construction per site as estimated for the Remaining Phase 1 sites and includes diesel fuel combustion and loss of vegetation.

Impact 3.11-5: Construction activities would generate short-term and localized fugitive dust, gas, and diesel emissions, and smoke that could affect adjacent residences and schools.

**NO-PROJECT ALTERNATIVE**

Under the No-Project alternative, no construction or transportation activities would occur because the project would not be implemented. Therefore, there would be no impact.

**PROPOSED PROJECT**

Construction activity associated with the Proposed Project would generate fugitive dust, gas, and diesel emissions and the project could generate smoke from vegetation burn piles; all of which could expose a number of adjacent residents and the nearby elementary school to air pollutants. Schools and residences are considered sensitive receptors. Therefore, this would be a significant impact.

**MITIGATION MEASURES**

Construction activities would generate short-term and localized fugitive dust, gas, and diesel emissions, and smoke that could affect adjacent residences and schools. Therefore, mitigation measures 4.11-5a, 4.11-5b, 4.11-5c, and 4.11-5d described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

## 3.12 Aesthetics

This section describes the aesthetic values and visual resources that are known to occur within the Proposed Project site boundaries and evaluates the effect that the Proposed Project could have on these values and resources. More details about this resource are described in the Trinity River Master EIR (Section 4.12).

### 3.12.1 Affected Environment/Environmental Setting

#### 3.12.1.1 Visual Environment

The visual environment, or character, is a function of both the natural and artificial landscape features that make up a view. Geologic, hydrologic, botanical, wildlife, recreational, and urban features such as roads, homes, and earthworks directly influence the visual character of an area. The perception of the visual character of an area can vary significantly by season and even by hour as light, shadow, weather, and the elements that compose the view change. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments (Federal Highway Administration 1983). The dominance of each of these components on the landscape serves to form the viewer's impression of the area. A viewer's impression directly corresponds to the aesthetic value of the landscape. The aesthetic value of an area is a measure of its visual character and scenic quality combined with the viewer response.

The visual character of the Trinity River as a whole is typified by the river channel, bordered by bands of riparian vegetation interspersed between homes, businesses, and, occasionally, deposits of dredge tailings. The riparian vegetation transitions to upland vegetation as the viewer moves away from the river. The location and boundaries of the Proposed Project sites are illustrated in Figures 2 and 3. Adjacent roads offer varying degrees of views of the river and rehabilitation sites. The

Lower Steiner Flat Rehabilitation Site is partially visible from the Steiner Flat Road; the Upper Junction City Rehabilitation Site is visible from SR-299 and areas along Dutch Creek Road, and the U-3 spoil area at the Lower Junction City Rehabilitation Site is visible from the bridge on Dutch Creek Road.

#### VIEWER GROUPS

The Proposed Project sites are subject to the perceptions of the following three distinct viewer groups: motorists, residents, and recreationists. Motorists are those persons who would view the sites from a moving vehicle and may be drivers or passengers. Views of the river corridor from the roadway at the Proposed Project sites are somewhat limited and of short-duration for motorists. Residents are people whose homes and/or property are in close proximity to, and have a view of, one of the Proposed Project sites or a portion of a site. The individual sensitivity of residents to aesthetics and changes within a viewshed is highly variable. Recreationists are members of the community or the general public who use the recreational resources available within or adjacent to a site. The Trinity River provides a myriad of recreational opportunities that are discussed in Section 3.8 (Recreation). Like residents, recreational users are highly sensitive to the visual character of the river corridor since most are drawn to the area by an appreciation of its scenic nature.

#### LIGHT AND GLARE

Because of the rural nature of the Trinity River corridor, the primary sources of artificial light are limited to vehicles passing through the area on state, local and private roads; concentrations of commercial/residential buildings; and, to a lesser degree, recreational features and facilities. Glare may occur during the daylight hours as the sun is reflected off the river or light-colored alluvium associated with the Trinity River floodplain.

#### VISUAL ASSESSMENT UNITS AND KEY OBSERVATION POINTS

The Federal Highway Administration (1983) defines a viewshed as all of the surface area visible from a particular location (e.g., a highway pull-out) or sequence of locations (e.g., a highway or trail). Viewsheds are referred to as Visual Assessment Units (VAUs) throughout this section of the document. VAUs are established to represent views of visually sensitive resources observed from various locations surrounding homes, public access areas, or roads in the project vicinity. VAUs provide a framework for comparing the visual effects of the Proposed Project.

VAUs for the Proposed Project sites were based on visibility from surrounding homes or public access areas along SR-299, Dutch Creek Road, and Steiner Flat Road, with one VAU corresponding to the site boundary being identified for each site. Key observation points[5] (KOPs) are identified for the VAUs, along commonly traveled routes or other likely observation points from which a representative group (i.e., residents, recreationists, or motorists) could view one of the rehabilitation sites. Three discrete KOPs (some including multiple aspects) were established within the VAU for the Lower Steiner Flat Rehabilitation Site (Figure 20); four KOPs were established within the VAU for the Upper Junction City Rehabilitation Site (Figure 21); and one KOP was established within the VAU for the Lower Junction City Rehabilitation Site (Figure 21). Table 17 provides a brief description of the KOPs and representative photographs of the sites are included as Tables 18, 19, and 20.

[5] Points from which the project boundary or portions thereof are visible from sensitive receptor areas, such as major travel routes and/or surrounding homes.

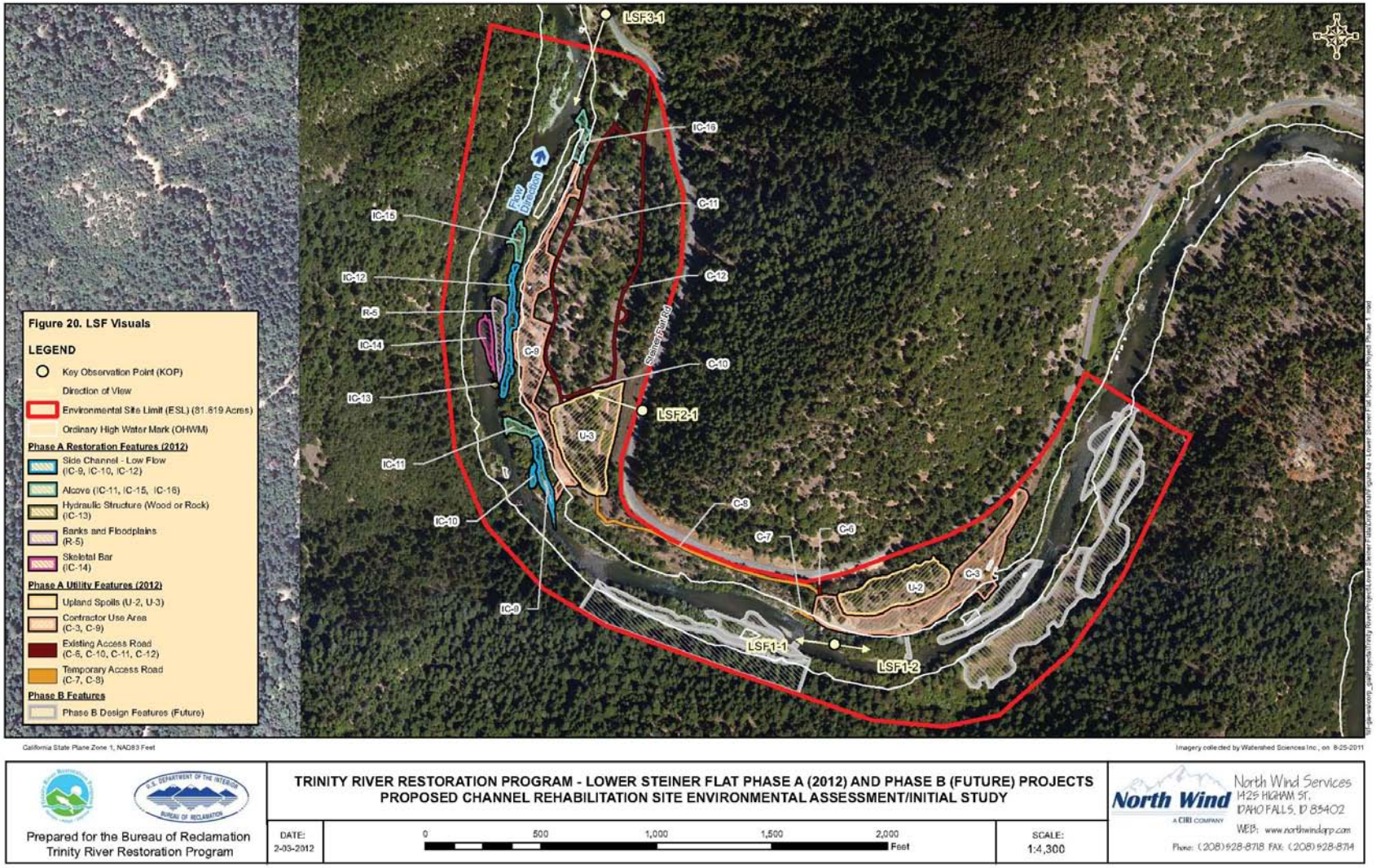


**Figure 14. Key Observation Points for the Lower Steiner Flat Rehabilitation Site.**

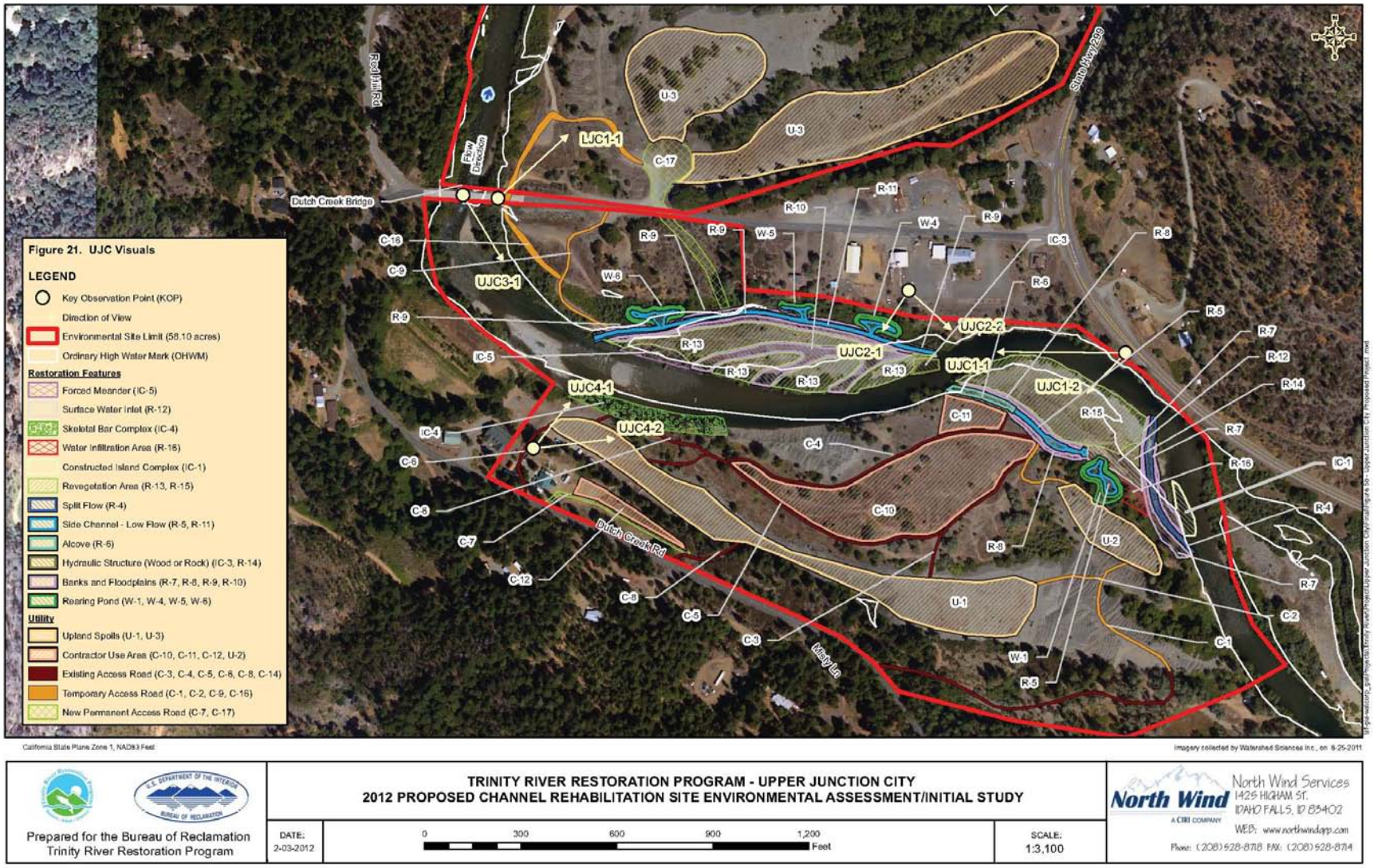


**Figure 15. Key Observation Points for the Upper Junction City Rehabilitation Site.**

| Table 14. Key Observation Points for the Proposed Project | |
|---|---|
| **KOP** | **Description of Key Observation Points** |
| LSF1-1 | View from river right from boat launch area, looking downstream. |
| LSF1-2 | View from river right from boat launch area, looking upstream. |
| LSF2-1 | View from river right from Steiner Flat Road, looking west into the project area. |
| LSF3-1 | View from river right from Steiner Flat Road, looking upstream into the project area. |
| UJC1-1 | View from river right from SR-299, looking downstream into the river and project area. |
| UJC1-2 | View from river right from SR-299, looking south-southwest across the river. |
| UJC2-1 | View from river right at the developed area along Dutch Creek Road looking downstream. |
| UJC2-2 | View from river right at the developed area along Dutch Creek Road looking upstream. |
| UJC3-1 | View from river right from the bridge on Dutch Creek Road, looking upstream into the project area. |
| UJC4-1 | View from river left from a residential area, looking northeast toward the river. |
| UJC4-2 | View from river left from a residential area, looking upstream into the project area. |
| LJC1-1 | View from the bridge on Dutch Creek Road, looking downstream into the project area toward the U-3 spoil area. |

**Table 15. Photographs of Views from Various Key Observation Points for the Lower Steiner Flat Rehabilitation Site**

Photo 1. View from boat launch area (LSF1).

Photo 2. View from boat launch looking down river (LSF1-1).

Photo 3. View looking up river from boat launch area (LSF1-2).

Photo 4. Typical view of vegetation within the rehabilitation site blocking views of the river from Steiner Flat Road (LSF2-1).

**Table 16. Photographs of Views from Various Key Observation Points for the Upper Junction City Rehabilitation Site**

Photo 1. View from SR-299 (UJC1-1 and UJC1-2).

Photo 2. View from river right near Dutch Creek Road looking upstream.

Photo 3. View from residential area, looking toward the river (UJC4-1).

Photo 4. View from residential area, looking upriver into the project area (UJC4-2).

**Table 17. Photographs of Views from the Key Observation Point for the Lower Junction City Rehabilitation Site**

Photo 1. View from Dutch Creek Road bridge (LJC1-1).

Photo 2. View of U-3 spoil area.

Views of the Proposed Project sites are visible from some locations when seen from SR-299, Dutch Creek Road, and Steiner Flat Road. Although the river channel is somewhat obscured from the view of motorists by vegetation and trees some portions of the sites and construction areas are visible from these roads. Because these roads are elevated above the river, motorists are afforded brief views of the sites through openings in the roadside vegetation. Portions of upland activity areas may be visible from the roads, but in-channel work may not be apparent from these locations. Views looking upstream and downstream into the sites may be limited by vegetation and topography.

There are no residences adjacent to the Lower Steiner Flat Rehabilitation Site. At the Upper Junction City Rehabilitation Site there are a few homes located on river left along Dutch Creek Road at the downstream end of the site from which the project area may be visible. These locations are situated above the project area but topography and vegetation provide some screening. While there is more recreation use at the Lower Steiner Flat site than at Upper Junction City (see Section 3.8, Recreation), recreationists at each of the sites would have views of the project activities.

#### WILD AND SCENIC RIVERS

The sites are located within the corridor of the Trinity River designated under the federal and state WSRAs. A review of the consistency of the Proposed Project with federal and state Wild and Scenic River designations is presented in Appendix A of the Trinity River Master EIR.

## 3.12.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.12.2.1 Methodology

Analysis of potential impacts to aesthetic resources relative to the Proposed Project is based on the significance criteria described in Appendix G of the CEQA Guidelines (Association of Environmental Professionals 2008). The Regional Water Board, acting as the CEQA lead agency, has used these criteria to develop significance thresholds. Significance thresholds are used to evaluate the Proposed Project's potential impact on the visual character of the Proposed Project sites with an emphasis on VAUs that are selected to characterize the aesthetic values and visual resources. This section provides a general discussion of the type and magnitude of impacts that could occur as a result of the project. The assessment is qualitative, with the potential impacts of activities at the Proposed Project sites evaluated in the context of the viewshed of the Trinity River corridor. A review of the consistency of the Proposed Project with federal and state Wild and Scenic River designations is presented in Appendix A of the Trinity River Master EIR.

### 3.12.2.2 Significance Criteria

The project would have a significant impact if it:

- Obstructs a scenic view from public viewing areas;
- Has a substantial adverse effect on a scenic vista;
- Substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrades the existing visual character or quality of the rehabilitation sites and their surroundings;
- Introduces physical features that are substantially out of character with adjacent residential areas;

- Alters the sites so that the scale or degree of change appears as a substantial, obvious, and disharmonious modification of the overall scenes (to the extent that they clearly dominate the view);
- Creates substantial daytime glare associated with new construction;
- Disrupts adjacent residential areas because of new night-time lighting;
- Creates a new source of substantial light or glare that would adversely affect day or nighttime views in the sites;
- Is inconsistent with the policies of the Trinity County and local general plans relating to aesthetics; or
- Is inconsistent with the goals and objectives of either the federal or state WSRA with regards to the Trinity River.

### 3.12.2.3 Impacts and Mitigation Measures

Table 21 summarizes the potential aesthetic impacts resulting from implementation of the No-Project alternative and Proposed Project.

**Table 18. Summary of Potential Aesthetic Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project with Mitigation |
|---|---|---|
| Impact 3.12-1. Implementation of the project could result in the degradation and/or obstruction of a scenic view from key observation areas. | | |
| No impact | Significant | Less than significant |
| Impact 3.12-2. Implementation of the project could substantially change the character of, or be disharmonious with, existing land uses and aesthetic features. | | |
| No impact | Less than Significant | Not applicable[1] |
| Impact 3.12-3. The project may be inconsistent with federal and state WSRA or Scenic Byway requirements. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.12-4. The project could generate increased daytime glare and/or nighttime lighting. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.12-1: Implementation of the proposed project could result in the degradation and/or obstruction of a scenic view from key observation areas.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the degradation and/or obstruction of a scenic view from key observation areas would not occur as a result of construction activities because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Potential impacts of project activities would include changes brought about by the removal of vegetation, construction of inundated surfaces, new access roads, and the creation of staging and gravel processing areas. These various activities are intended to restore the form and function of an alluvial river, thereby enhancing the overall aesthetic values and visual resources associated with the Trinity River and the surrounding landscape. While the adverse impacts are expected to be temporary in nature and the long-term outcome should improve the visual diversity of the

corridor, the short-term impacts would persist for some period. The impacts at the Lower Steiner Flat Rehabilitation Site would be prolonged because the activities at that site would occur in two phases.

Impacts to aesthetics at the Lower Steiner Flat Rehabilitation Site would be potentially significant, particularly when viewed from KOPs LSF1-1 and LSF1-2. Proposed activities in the channel would have a significant impact on the visual environment. However, because Proposed Project activities are intended to restore the form and function of an alluvial river, potentially adverse visual impacts occurring during construction would be temporary, lasting only until natural processes take over.

Recreationists looking downstream from the boat launch area (KOP LSF1-1; Photo 2 in Table 18) would not see Phase A rehabilitation activities because of the bend in the river which would screen the activity areas further downstream from view. Recreationists leaving the boat launch area and floating down the river would have views of the Phase A activities in 2012 however. Phase B activities that would be visible from LSF1-1 include X-2, X-3, R-4, IC-5, IC-6, and IC-8. In addition, activity areas U-2 – the upland spoil area – and C-3 – contractor use area – would be visible for those recreating in the boat launch area and may detract from the aesthetic quality of the area until the disturbed area is revegetated. These would be visible in 2012 during Phase A implementation and during Phase B.

Looking upriver from the boat launch area (LSF1-2) recreationists may be able to see portions of Activity Areas R-2, R-3, IC-3, and IC-4 during Phase B implementation but they would be largely screened by vegetation and the bend in the river upstream of the launch area (see Photo 3 in Table 18). Effects of the construction activities would be similar to those described above for KOP LSF1-1.

Some of the proposed Phase A activities could be visible from LSF2-1 depending on the direction the motorist is facing. The elevation of the road allows for views of the floodplain in this area but most of the activity would be obstructed by vegetation. Traveling downstream on Steiner Flat Road a motorist could see portions of Activity Areas U-3 and C-10, as well as possibly Activity Areas C-9, IC-10, IC-11, IC-12, IC-13, IC-14, and R-5. However, vehicles would only have brief glimpses of the activity areas due to dense riparian vegetation in the area (see Photo 4 in Table 18) and traveling speeds. Traveling upstream on Steiner Flat Road in the LSF2-1 location a motorist could see portions of Activity AreasC-9, U-3, IC-9, IC-10, and IC-11. The Phase B activities would not be visible from this location.

Views from LSF3-1 of construction activities proposed at the Lower Steiner Flat Rehabilitation Site would be buffered by vegetation, topography, and distance. Motorists traveling upriver along Steiner Flat Road would have a brief glimpse of the river corridor from this location. Parts of the Activity Areas C-9, IC-12, IC-14, IC-15, IC-16, R-5, and U-3 could be visible by motorists during Phase A implementation. The Phase B activities would not be visible from this location.

Motorists traveling along SR-299 would have views of the Upper Junction City Rehabilitation Site from KOPs UJC1-1 and UJC1-2. Although there is vegetation along the roadway there are openings where the project area would be briefly visible (see Photo 1 in Table 19). From KOP UJC1-2, R-5, R-7, and R-15 would be visible in the foreground and R-6, R-8, C-10, C-11, and U-2 would possibly be visible in the background. From KOP UJC1-1, Activity Areas IC-3, R-9, R-10, R-13, and W-4 would be visible to motorists passing by the site on SR-299.

From UJC2-1 and UJC2-2 views of most of the site would be blocked by vegetation and topography. The structures at this location are set back some distance from the edge of the hill, closer to the road, such that the project activities would not be visible due to vegetation, topography, and distance. Individuals walking out to the edge of the hill overlooking the river would have views of the project site. From this vantage point individuals would be looking down into activity areas IC-3, R-9, R-10, R-11, R-13, W-4, and W-5 and they could also look across the river to C-11, R-6, R-8, and R-15 as well as other areas.

Motorists traveling over the bridge on Dutch Creek Road at UJC3-1 would be able to view the project site. The views from this location would be brief as seen by motorists traveling along this route and would be buffered to some extent by topography, vegetation, and distance limiting the extent of views of the site. The elevation of the road allows for views of the floodplain on river left but most direct views of the rehabilitation site would be obscured by vegetation and topography. Activity Areas C-10, IC-4, and U-1 would most likely be visible and work at IC-5, R-9, R-10, and R-13 may also be visible on river right.

A few homes are located along Dutch Creek Road on river left overlooking the rehabilitation site. Both the homes and the road are set back some distance from the edge of the river and views from this location are buffered to some extent by vegetation, topography, and distance. Homes adjacent to Dutch Creek Road (KOPs UJC4-1 and UJC4-2) would have views of various parts of the downstream end of the site, depending on aspect. Parts of Activity Areas C-12, IC-4, and U-1 would be visible on river left from this area while most of the other activities on this side of the river would likely be screened by topography and distance from these residences (see Photos 3 and 4 in Table 19). Parts of R-9, R-10, R-11, R-13, and W-6 may also be visible on river right. Views by motorists traveling on this portion of Dutch Creek Road would be mostly obstructed by vegetation.

The U-3 spoil area in the Lower Junction City site would be visible to motorists traveling across the bridge on Dutch Creek Road (KOP LJC1-1; Photo 1 and 2 in Table 20). The views from this location would be brief as seen by motorists traveling along this route and would be buffered to some extent by topography. The U-3 spoil area is not visible from Red Hill Road due to vegetative screening and is also mostly obstructed from SR-299.

Project-related visual changes at the Proposed Project sites would be apparent to in-channel recreationists. In-channel recreationists such as rafters would have unobstructed views of much of the in-channel construction as well as some of the upland project activities where they are not blocked by dense riparian vegetation that is common to the Trinity River.

#### MITIGATION MEASURES

Implementation of the project could result in degradation and/or obstruction of a scenic view from key observation areas. In order to minimize impacts to visual resources resulting from the removal of vegetation in the project areas, mitigation measures 4.7-1a, 4.7-1b, and 4.7-1c, as described in Section 3.7 (Vegetation, Wildlife, and Wetlands), will be implemented where applicable. Visual impacts related to water quality (e.g., the potential for increased turbidity to adversely impact the aesthetic quality of the river) would be mitigated through the implementation of mitigation measures 4.8-3a, 4.8-3b, 4.8-3c, 4.8-3d, 4.8-3e, and 4.8-3f, as discussed in Section 3.8 (Recreation), where applicable. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.12-2: Implementation of the proposed project could substantially change the character of, or be disharmonious with, existing land uses and aesthetic features.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction would occur at the Proposed Project sites. No changes would occur to the character or harmony of aesthetic features and existing land uses. Therefore, there would be no impact.

#### PROPOSED PROJECT

Activities associated with the Proposed Project are intended to be not only functional (e.g., enhance fisheries and restore river sinuosity), but to complement the aesthetic values and visual resources associated with the rehabilitation sites. Overall, the Proposed Project incorporates the project area's diversity of landscapes and vegetation types to define the location, character, and magnitude of the rehabilitation activities at the sites. For example, materials excavated from riverine areas would be removed to upland areas or used as a source of coarse sediment to enhance the alluvial function of the river. Material transported to upland activity areas would be placed in a manner that blends the materials into the contours of the topography. Retention of existing topographic features would significantly lessen the degree of visual impact.

The activities described in Chapter 2 provide a framework for reestablishing the physical process necessary to enhance the alluvial attributes of the river channel and floodplain over time, particularly those attributes that are flow dependent. Over time, the Proposed Project would produce gradual, ever-improving changes in the aesthetic quality of this reach of the Trinity River, while maintaining the character of the surrounding land uses. Because changes associated with the Proposed Project would retain the character of existing land uses and features, implementation would result in a less than significant impact on aesthetic resources.

Impact 3.12-3: The proposed project may be inconsistent with the federal or state WSRA or Scenic Byway requirements.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, the Proposed Project would not be constructed. No changes would occur that would be inconsistent with the federal or state WSRA or Scenic Byway requirements. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under Section 7 of the WSRA, direct and adverse effects to the values for which the Trinity River was recognized as a Wild and Scenic River are prohibited. Project implementation would be consistent with these values because the activities would not be considered substantially out of character with the current aesthetic conditions. Implementation of the Proposed Project would result in a less than significant impact to WSRA and Scenic Byway requirements.

Impact 3.12-4: The proposed project could generate increased daytime glare and/or nighttime lighting.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no changes in daytime glare or nighttime lighting would occur because the Proposed Project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, significant increases in daytime glare and/or nighttime lighting are not anticipated to occur. Construction activities would not take place during nighttime hours; therefore, nearby homes and motorists traveling on roads adjacent to the river corridor would not be subjected to the headlights of construction equipment or stationary spotlights. Material removed from the floodplain and deposited at various activity areas is generally not reflective and would not increase the level of daytime glare observable to the viewer. Some changes may occur in the locations and amounts of glare produced by water over the constructed inundation surfaces, but, overall, these changes would be short-lived and variable by day, as well as season. These effects would be prolonged at the Lower Steiner Flat site because activities would occur in two phases. The impacts of these changes would be less than significant.

The most likely viewer group to be affected by daytime glare would be residents at the Upper Junction City Rehabilitation Site if they are present during daytime hours. Occurrences of daytime glare produced by the sun reflecting off the water or construction equipment would be of short duration, or temporary. Such an impact would be less than significant.

## 3.13 Hazards and Hazardous Materials

### 3.13.1 Affected Environment/Environmental Setting

This section evaluates hazards and hazardous materials that may currently be present within the Proposed Project site boundaries. The potential for using hazardous materials or generating hazardous waste in conjunction with rehabilitation activities is discussed in the Trinity River Master EIR (Section 4.13). Hazardous materials and the potential for health hazards to be generated by implementation of the Proposed Project are also assessed in this section.

#### HAZARDOUS MATERIAL AND HAZARDOUS WASTE

Federal, state, and local agencies regulate hazardous materials and hazardous waste. Nonetheless, illegal storage and disposal and unintentional releases of hazardous materials or waste from leaks and accidents can occur when hazardous materials are used or hazardous waste is generated by a project. Regional roadways including SR-299 and Red Hill Road are frequently used to transport hazardous materials throughout Trinity County. Under the California Code of Regulations (CCR), Title 13, Section 1150-1194, and CFR, Title 49, the California Highway Patrol (CHP) regulates the transport of hazardous materials. When a spill of hazardous material or waste occurs on a highway, the CHP is responsible for directing cleanup and enforcement (CCR Section 2450-2453b).

#### ROADWAYS AND EVACUATION ROUTES

The Proposed Project sites are immediately adjacent to SR-299, Dutch Creek Road, and Lower Steiner Flat Road and access to the sites would be made from the latter two of these roads. These roads would serve as the primary evacuation routes for the sites.

#### WILDLAND FIRE

Steep topography and a mosaic of mixed-conifer, hardwood, and chaparral woodlands coupled with typically hot, dry summers create extreme fire danger throughout most of Trinity County. Human-caused fires, particularly along roadways and other developed areas, are relatively common, although the county is also frequently subject to lightning-caused fires. Wildland fire, regardless of the cause, can be detrimental to watershed function, killing vegetation, burning the organic matter in litter and soil, and forming impervious soil layers, factors that contribute directly

to accelerated runoff and erosion from the watershed during and immediately after a storm event.

Trinity County fire protection needs are met by 16 volunteer fire departments dispersed throughout the county, Cal Fire, and the USFS. Cal Fire is responsible for wildland fire protection on all private lands in Trinity County, and the USFS is responsible for wildland fire protection on all federal National Forest lands. However, Cal Fire also contracts with the BLM to provide wildland fire protection on its public lands. The Junction City Volunteer Fire Department (VFD) and Douglas City VFD provide services within their general plan areas and are responsible for structural fire protection and rescue services in Trinity County throughout the year.

#### FLOODING AND SEISMIC EVENTS

A review of the FEMA FIRMs indicates that the sites are within an area for which the BFEs have been determined and the sites are in a designated floodway. Areas designated by FEMA as being within "Zone X", are subject to a 100-year flood with average depths of less than 1 foot or with drainage areas of less than 1 square mile. Trinity River flows through these sites are moderated by the TRD below Lewiston Dam.

Infrequently, seismic events occur in the region generally in the form of low to moderate levels of ground shaking associated with nearby or distant earthquakes. The potential for landslides triggered by seismic events is not significant within the corridor of the mainstem Trinity River, due to the low level of historical occurrence of seismic activity in the region. However, the steep topography and shallow, erosive soils found in much of the region increase the potential for landslides and rockfalls triggered by seismic events, precipitation, or other types of disturbances. Seismic activity known to occur in the project region is discussed in the Trinity River Master EIR (Sections 4.3 and 4.13), including a detailed discussion of geologic hazards that could be associated with rehabilitation sites.

## 3.13.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.13.2.1 Methodology

Hazards and hazardous materials associated with the rehabilitation sites were assessed in the field by TRRP staff. In addition, Trinity County Planning Department and Environmental Health Department staff will be consulted regarding the potential for hazardous substances to occur in the general vicinity of the project areas boundaries.

### 3.13.2.2 Significance Criteria

An impact related to hazards and hazardous materials would be significant if the project would:

- Involve the use, production, or disposal of materials that pose a hazard to people or to animal or plant populations in the area affected;
- Create a substantial potential public health or safety hazard due to risk of upset (accidents);
- Create a substantial potential public health or safety hazard due to a reasonably foreseeable release of hazardous materials and/or hazardous waste (i.e., from contaminated soil);
- Violate applicable laws intended to protect human health and safety or expose employees to working situations that do not meet health standards;
- Physically interfere with, or impair implementation of, emergency response plans or emergency evacuation plans;

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to *California Government Code* Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

### 3.13.2.3 Impacts and Mitigation Measures

Table 22 summarizes the potential hazards and hazardous materials impacts that could result from construction of the project.

**Table 19. Summary of Hazards and Hazardous Materials Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.13-1. Implementation of the project could increase the potential for release of, or exposure to, potentially hazardous materials that could pose a public health or safety hazard. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.13-2. Construction activities associated with the project may interfere with emergency response and evacuation plans by temporarily slowing traffic flow. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.13-3. Implementation of the project may contribute to wildland fire potential and catastrophic fire behavior in the project area. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.13-4. Implementation of the project may contribute to an increased risk of landslides and flooding. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.13-1: Implementation of the proposed project could increase the potential for release of, or exposure to, potentially hazardous materials that could pose a public health or safety hazard.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, construction activities that could potentially release hazardous substances (e.g., oil, gas, diesel, and mercury) into the environment at levels that could pose a health or safety hazard to the public would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Activities associated with the Proposed Project would utilize potentially hazardous materials (e.g., oil and fuels) associated with the operation of vehicles and construction equipment during project construction. These materials are similar to those routinely used for other types of construction projects throughout Trinity County. The widespread use and associated transport of these materials along the highways and county roads that traverse Trinity County, combined with the low level of incidents (spills), suggest that impacts related to rehabilitation activities would be

similar to that elsewhere in Trinity County. Given the temporary nature of construction and the distance from residences, schools, and frequently used recreation areas, implementation of BMPs would minimize the potential for any project-related hazardous materials becoming a public hazard. This impact would be less than significant; therefore, no mitigation is required.

Impact 3.13.2: Construction activities associated with the proposed project may interfere with emergency response and evacuation plans by temporarily slowing traffic flow.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, construction activities that could interfere with emergency response and evacuation plans would not occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, construction traffic would include the mobilization and demobilization of construction equipment (e.g., scrapers, excavators, and bulldozers) to and from the site over the course of the construction period. At the Lower Steiner Flat site, mobilization and demobilization would occur in two phases: Phase A would occur in 2012 and Phase B would occur at a later date. Once the equipment is on the site, construction traffic would be limited to daily trips for personnel and routine service and supply vehicles. Construction activities would be managed to ensure that emergency response and evacuation plans are not impeded. The impacts created would be less than significant; therefore, no mitigation is required.

Impact 3.13.3: Implementation of the proposed project may contribute to wildland fire potential and catastrophic fire behavior in the project area.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, implementation of the project would have no impact on wildland fire potential or catastrophic fire behavior because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

The proposed activities described in Chapter 2 would occur within or adjacent to the riparian corridor of the Trinity River. Potential fuels within the boundaries of the sites (e.g., grasses and herbaceous weeds) are generally noncontiguous and the river serves as a substantial natural firebreak. The types and amounts of fuels and their continuity may be decreased temporarily by implementation of this alternative, particularly in areas subject to vegetation removal, but any such changes would not be significant with respect to fire potential and behavior. In the long-term, potential fire conditions would be similar to those that currently exist (e.g., potential fuels would be limited to riparian vegetation, sporadic grasses, and herbaceous weeds). Proposed Project implementation would have a less than significant impact on wildland fire potential and behavior; therefore, no mitigation is required.

Impact 3.13.4: Implementation of the proposed project may contribute to an increased risk of landslide or flooding.

#### NO-PROJECT ALTERNATIVE

The No-Project alternative would have no impact on the potential for landslides or flooding because the project would not be constructed. Therefore, there would be no impact.

**PROPOSED PROJECT**

Under the Proposed Project, most of the activities described in Chapter 2 would take place in the river channel or floodplain, both of which have relatively flat topography. Furthermore, the alternative does not involve alteration of toe-slopes adjacent to any geologically unstable areas (e.g., landslides). Proposed Project implementation would result in either no change to the BFE or a reduction of the BFE, since stockpiled excavated material would be stored in the adjacent uplands. The potential for flooding would not be increased at the Proposed Project sites. These impacts would be less than significant; therefore, no mitigation is required.

## 3.14 Noise

This section evaluates the potential noise impacts associated with implementation of the Proposed Project. The evaluation is based on a review of local land use plans and policies pertaining to noise and field reconnaissance used to identify potential sensitive receptors within and adjacent to the boundaries of these sites. A detailed discussion of methodology used to quantify noise is provided in the Trinity River Master EIR (Section 4.14).

### 3.14.1 Affected Environment/Environmental Setting

Noise is generally defined as excessive and unwanted sound emanating from noise-producing objects. Total environmental noise exerts a sound pressure level that is generally measured with an A-weighted decibel scale (dBA), which approximates the range of sound audible to the human ear (where 10dBA is at the low threshold of hearing and 120-140dBA is the threshold of pain). Human responses to noise are subjective and can vary. The subjective effects of noise are difficult to measure as are the corresponding reactions of annoyance and dissatisfaction. Individual tolerance thresholds vary widely based on an individual's past experiences with noise. Intensity, duration, frequency, time pattern of noise, and existing background noises are some factors that can influence individual responses to noise. Table 4.14-1 of the Trinity River Master EIR lists examples of dBA levels for a range of noises and Table 4.14-2 lists the U.S. General Services Administration maximum noise levels allowed for government contract construction activities. Typical construction noise levels that could occur at the rehabilitation sites as a result of project activities are shown in Table 23. The noise levels shown in this table assume the operation of various types of construction equipment, as shown in Table 24.

**Table 20. Typical Construction Noise Levels**

| CONSTRUCTION STAGE | NOISE LEVEL (DBA, $L_{EQ}$)[1] |
|---|---|
| Ground clearing | 84 |
| Excavation | 89 |
| Hauling | 88 |
| Revegetation | 65 |

[1] Average noise levels 50 feet from the noisiest source and 200 feet from the rest of the equipment associated with a given construction stage. Noise levels correspond to public works projects (50 dBA ambient environments) (Bolt et al. 1971).

| Table 21. Construction Equipment Noise | |
|---|---|
| **TYPE OF EQUIPMENT** | **MAXIMUM LEVEL (DBA AT 50 FEET)** |
| Truck | 75 |
| Scrapers | 80 |
| Bulldozers | 75 |
| Backhoe | 75 |
| Pneumatic tools | 80 |

Source: Sincero and Sincero 1996

Noise is not considered a problem in Trinity County. A community noise survey was conducted in Trinity County in 2002 (Brown-Buntin 2002) as part of an update that was being developed for the noise element of the County's General Plan. The community noise survey results indicate that typical noise levels in noise-sensitive areas range from approximately 44 to 52 dB Ldn[6]. These are low noise levels and are representative of small communities and rural areas. Maximum noise levels observed during the survey were generally caused by local automobile traffic or heavy trucks. Other sources of maximum noise levels included occasional aircraft and construction activities. Background noise levels in the absence of these maximum-noise generating sources are largely attributable to distant traffic, water, wind, livestock, birds, and insects.

Noise-sensitive receptors that have been identified in the general vicinity of the Proposed Project sites include private residential areas; persons, primarily recreationists (e.g., hikers, picnickers, anglers, and rafters); and wildlife that use the Trinity River corridor. Noise tolerance levels for these groups are subjective, varying widely between individuals.

The Lower Steiner Flat Rehabilitation Site is located adjacent to Lower Steiner Flat Road; the Upper Junction City Rehabilitation Site is adjacent to Dutch Creek Road as well as SR-299, which is one of the area's larger roads; and the Lower Junction City Rehabilitation Site is also adjacent to Dutch Creek Road and SR-299. Traffic from these roads would be heard passing by both of these sites. Even though the sites are adjacent to these relatively heavily traveled roads, traffic-generated noise is generally infrequent and buffered by vegetation and topography.

The homes on the left bank of the Upper Junction City Rehabilitation Site represent a sensitive noise receptor within the site boundaries. Residential areas are subjected to varying degrees of ambient noise levels from the river (including recreationists) and intermittent traffic using roads in the project vicinity. Because the homes at Upper Junction City sit upslope of the floodplain, noise from the river can be readily apparent. Existing vegetative would provide a buffer for some of the noise that would be generated in the site's river-side project activity areas.

To varying degrees, construction vehicles entering and leaving the sites would temporarily increase traffic levels and, thus, ambient noise levels along the roads adjacent to the sites. Homes on river left of the Upper Junction City site as well as the structures on river right may experience some increased ambient noise levels during construction, but in general, noise levels would be buffered somewhat by distance and vegetation.

[6] dB $L_{dn}$ = The average equivalent sound level during a 24-hour day, obtained after addition of 10 A-weighted decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m. A-weighted decibels, abbreviated dBA, or dBa, or dB(a), are an expression of the relative loudness of sounds in air as perceived by the human ear.

## 3.14.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.14.2.1 Methodology

Since the Proposed Project would not result in a noticeable increase in traffic volume, construction-related noise is the focus of this impact analysis. Construction noise impacts are based on an assumed mixture of construction equipment and related noise levels. Assumptions related to construction equipment and industry noise averages were used to evaluate construction-related noise impacts, including noise levels at the nearest sensitive receptors.

### 3.14.2.2 Significance Criteria

Based on Appendix G of the CEQA Guidelines (Association of Environmental Professionals 2008) the Proposed Project would have a significant direct noise impact if it would result in:

- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels; or
- Exposure of persons to, or generation of, noise levels in excess of standards established in the Trinity County General Plan noise element, or applicable standards of other agencies.

### 3.14.2.3 Impacts and Mitigation Measures

Table 25 summarizes the potential noise impacts resulting from implementation of the No-Project alternative and Proposed Project.

**Table 22. Summary of Potential Noise Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.14-1. Construction activities associated with the proposed project would result in noise impacts to nearby sensitive receptors. | | |
| No impact | Significant | Less than significant |

Impact 3.14-1: Construction activities associated with the proposed project would result in noise impacts to nearby sensitive receptors.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no change in ambient noise levels would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

During the construction phase of the project, noise from construction activities would temporarily dominate the noise environment in the immediate area of the sites. Construction activities would generate maximum noise levels ranging from 65 to 84 dBA at a distance of 50 feet, although intervening terrain and vegetation could reduce these noise levels. Construction noise would be temporary and is expected to occur primarily between the months of July and December. Because activities at the Lower Steiner Flat Rehabilitation Site would be implemented in two phases, there

would be two distinct timeframes wherein noise levels would be increased. There would be no permanent noise impacts resulting from implementation of the Proposed Project.

Residences located within the Upper Junction City Rehabilitation Site boundaries would be subjected to varying degrees of construction noise. It is not anticipated that ground vibration created by project activities would be detectable at any sensitive receptor location and would not result in any structural damage. Recreational users in the general vicinity of the site could encounter increased ambient noise levels during construction activities. While such an increase in noise would be significant, its impact would be temporary and localized.

#### MITIGATION MEASURES

Construction activities associated with the project would result in noise impacts to nearby sensitive receptors. Therefore, mitigation measures 4.14-1a, 4.14-1b, and 4.14-1c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

## 3.15 Public Services and Utilities/Energy

This section addresses the public services and utilities associated with the Proposed Project sites and evaluation of the impacts on these resources from implementation of the Proposed Project. These resources are described in the Trinity River Master EIR, Section 4.15.

### 3.15.1 Affected Environment/Environmental Setting

#### WATER SUPPLY AND DISTRIBUTION

Community and private water systems serve development in the Douglas City community. The Weaverville Community Services District serves several residences and the two mobile home parks in Douglas City. The private water systems consist of individual and shared wells, springs, and river intakes. No community water systems exist in Junction City; mutual and private water systems serve the Junction City community. The majority of the residential, commercial, and recreational developments within or adjacent to the Proposed Project sites are served by private water systems that derive water from individual wells, springs, and river-intake systems. Surface water sources are more frequently used for domestic purposes along the river corridor than groundwater sources and often require varying levels of treatment prior to use.

#### SURFACE WATER

The Trinity River is the primary surface water body at the rehabilitation sites. Surface water is used primarily for domestic purposes, including gardens, livestock, and fire protection. The TRRP has been working with landowners in the general vicinity of rehabilitation sites to relocate surface water intake systems affected by post-ROD flows.

#### GROUNDWATER

Groundwater wells provide water for domestic and commercial purposes in the vicinity of the Proposed Project sites. Due to the location and nature of the terrain, groundwater levels respond generally to river stage. Geologic investigations conducted for the project suggest that groundwater levels fluctuate seasonally with river flows. Some domestic water sources collect groundwater from deep wells. Project activities have been designed to ensure that known groundwater wells are avoided.

#### SOLID WASTE COLLECTION AND DISPOSAL

Trinity County operates nine solid waste transfer stations throughout the county, where waste is collected for shipment by truck to the Anderson Landfill in Shasta County. Solid waste collected from the rehabilitation sites would be transported by truck either to the Weaverville transfer station or to the landfill located in Anderson.

#### FIRE PROTECTION AND EMERGENCY SERVICES

Cal Fire, BLM, and USFS provide fire protection services throughout Trinity County. Cal Fire generally provides fire protection services between May and late October. During the winter, Cal Fire responds from Weaverville with one engine, if personnel are present. During the summer, Cal Fire is equipped to provide three engines with 2,250 gallons of water and 12 to 13 firefighters. Minimum response time is 15 to 20 minutes on average. Half of these responses are typically for structure or flue fires and half are for wildland fires. The Junction City VFD and Douglas City VFD provide fire protection services for the areas surrounding the Proposed Project sites.

The Douglas City VFD provides fire protection services in the vicinity of Douglas City. This VFD is the primary fire protection agency for structural fires; it maintains a fire station in the Douglas City community core area with two engines and a quick response vehicle with a 200-gallon slip-on tank. This VFD maintains a second fire station in the Poker Bar-Vizhum Grade area that is supported by volunteers from the local response area. This station has one engine and a service truck.

The Junction City VFD provides fire protection services in the vicinity of Junction City. The crews in this VFD are the primary responders to vehicle accidents, structure fires, and wildland fires on a year-round basis. This VFD maintains three fire engines, a rescue vehicle, and a water tender.

#### SCHOOLS

The Douglas City Elementary and Junction City Elementary schools consist of grades kindergarten through eight. The Douglas City Elementary school district provides bus service for residents in this community; however, there is no bus service for Junction City Elementary. Bus service is provided throughout these communities for students attending Trinity High School in Weaverville.

## 3.15.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.15.2.1 Methodology

The analysis addresses potential impacts from implementation of activities at the Proposed Project sites on a number of public services and facilities that are described in detail in the Trinity River Master EIR. The analysis qualitatively addresses potential impacts on energy resources resulting from substantial or wasteful energy use during project construction. The analysis is based on a review of planning documents applicable to the sites and field reconnaissance.

### 3.15.2.2 Significance Criteria

The project would normally have a significant impact on public services or utilities under CEQA if it would:

- Not comply with published national, state, or local statues, regulations, or standards relating to solid waste;
- Interfere with emergency services;
- Degrade the level of service of a public service or utility;
- Require relocating infrastructure;

- Result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios; response times; or other performance objectives for fire protection, police protection, schools, parks, or other public services;
- Require substantial improvements to the infrastructure or level of staffing of a public service or utility to maintain its existing level of service;
- Require or result in the construction of new water treatment, wastewater treatment, or storm water drainage facilities, or the expansion of such existing facilities, the construction of which could cause significant environmental effects;
- Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Disrupt utilities service to create a public health hazard or extended service disruption; or
- Encourage activities that result in the use of large amounts of fuel or energy, or would use fuel or energy in a wasteful manner.

### 3.15.2.3 Impacts and Mitigation Measures

Table 26 summarizes the potential impacts on public services and utilities that could result from Proposed Project implementation.

**Table 23. Summary of Public Services and Utilities Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.15-1. Implementation of the project could disrupt existing electrical and phone service during construction activities. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.15-2. Construction of the project could result in the generation of increased solid waste. | | |
| No impact | Less than significant | Not applicable[1] |
| Impact 3.15-3. Implementation of the project could result in disruption to emergency services, school bus routes, or student travel routes during construction activities. | | |
| No impact | Significant | Less than significant |
| Impact 3.15-4. Construction of the project could result in a substantial use of nonrenewable energy resources. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.15-1: Implementation of the proposed project could disrupt existing electrical and phone service during construction activities.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no construction-related disruption to existing electrical or telephone service would occur because the project would not be implemented. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, no activities would occur to disrupt electrical or telephone service within or adjacent to the sites. Utility poles and/or underground lines located within the boundaries of the sites would be identified by the TRRP, and activities described in Chapter 2 have

been designed to avoid impacts to these facilities. A number of electrical and phone lines cross access roads to the sites, typically in a manner that provides adequate vehicular clearance for phone and utility lines. These clearances would be adequate to allow access by construction equipment. Potential impacts on electrical and phone utilities and services at the Proposed Project sites as a result of project implementation would be less than significant; therefore, no mitigation is required.

Impact 3.15-2: Construction of the proposed project could result in the generation of increased solid waste.

#### NO-PROJECT ALTERNATIVE

Increased quantities of solid waste would not be generated under the No-Project alternative because there would be no construction activities. Therefore, there would be no impact.

#### PROPOSED PROJECT

Under the Proposed Project, construction would result in the generation of solid waste associated with the removal of substantial amounts of vegetation and other construction-related waste (e.g., garbage, containers, and oil). Vegetative materials (e.g., stumps, roots, and branches) would be disposed of within the sites. Disposal methods for vegetative materials could include chipping to provide mulch, burial, piling to provide wildlife habitat on site, burning, or integration into the activity areas to provide structural habitat for juvenile fish. Solid waste generated by construction activities would either be disposed of at a local transfer station (Weaverville) or transported by truck to the Anderson Landfill in Shasta County. The Anderson Landfill currently has sufficient capacity and the necessary permits to accommodate non-hazardous construction waste. The contractor would be responsible for ensuring appropriate disposal of any hazardous waste, as approved by Reclamation. Disposal of potentially hazardous waste is evaluated in Section 3.12, Hazards and Hazardous Materials.

Temporary access routes built for project implementation would be closed and/or decommissioned to ensure that the number of public access points on public lands would not increase, which could require the provision of public services (e.g., solid waste disposal) at locations that are inconsistent with agency management plans, guidelines, and policies. Therefore, this impact would be less than significant.

Impact 3.15-3: Implementation of the proposed project could result in disruption to emergency services, school bus routes, or student travel routes during construction activities.

#### NO-PROJECT ALTERNATIVE

Since there would be no construction activities associated with implementation of the No-Project alternative, emergency services, school bus routes, and student travel routes would not be disrupted. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction activities at the sites would be confined within the project boundaries described in Chapter 2. Construction personnel and service vehicles would use designated routes to and from the sites. Traffic control associated with site activities would be minimal and is not expected to cause more than minimal disruptions to public services. Access for mobilization and demobilization of heavy equipment, however, may require a higher level of traffic control for local roadways and may disrupt traffic flow and circulation before, during, and after construction. Therefore, effects on emergency services, school bus routes, and student travel routes resulting

from heavy equipment would be significant. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B.

No road/bridge closures are planned for project implementation; however, in the event that it becomes necessary to temporarily close a road or bridge as a result of project activities, the road/bridge closures would occur during non-peak hours to avoid traffic circulation impacts associated with emergency services and school bus services. A closure, even during non-peak hours (i.e., 11:00 p.m. to 6:00 a.m.) could have the potential to increase significantly the response time for law enforcement, fire protection, and other emergency services. In the event that road closures would be required during the school year (mid-August through mid-June), these closures could delay school bus service, where it exists. While this impact would be temporary, it could interfere with student access to bus service and, thus, school attendance. Because of the potential for temporary traffic controls on local roadways, increased response time for emergency services, and interference with student travel, the impact would be significant.

#### MITIGATION MEASURES

Implementation of the project could result in disruption to emergency services, school bus routes, or student travel routes during construction activities. Therefore, mitigation measures 4.15-3a, 4.15-3b, and 4.15-3c described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project implementation. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.15-4: Construction of the proposed project could result in a substantial use of nonrenewable energy resources.

#### NO-PROJECT ALTERNATIVE

No use of nonrenewable energy resources would occur under the No-Project alternative because construction activities would not occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

Energy expenditures associated with construction at the sites would include both direct and indirect uses of energy. Combustion of the refined petroleum products needed to operate construction equipment would be part of the direct energy use. Indirect energy use typically represents about three-quarters of total construction energy usage, with direct energy use constituting the remaining quarter. Though construction energy would be consumed only during the construction phase, it would represent an irreversible consumption of finite natural energy resources.

Construction would directly consume fuel and electricity. Construction would also indirectly consume fuel and electricity because of the energy used to provide the materials necessary for construction. Fuel would be consumed by both construction equipment and construction-worker vehicle trips. Minor electrical use might be required for some construction equipment, such as welding machines, power tools, and pumps.

Construction energy consumption would be a short-term impact and would not be an ongoing drain on finite natural resources. Construction would consume energy primarily in the form of fuel from local commercial sources and would not have a significant effect on local or regional energy sources. Therefore, this impact would be less than significant.

## 3.16 Transportation/Traffic Circulation

This section describes the existing transportation and traffic conditions in proximity to the Proposed Project sites and evaluates the potential impacts to transportation resources and traffic circulation from implementation of the Proposed Project.

### 3.16.1 Affected Environment/Environmental Setting

Regional and local roadways and circulation in the vicinity of the Proposed Project sites are described in Section 4.16 of the Trinity River Master EIR. Table 27 identifies and characterizes the access roads for the sites. Based on reconnaissance information provided by TRRP staff and members of the design team, the roads identified in the table are maintained to varying degrees by the responsible party. No improvements to these roads are anticipated from project activities.

**Table 24. Roadway Characteristics for Potential Access Roads Serving the Proposed Project Sites**

| Road Name | Ownership | Surface Type | Roadway Class | Traffic Counts (ADT) |
|---|---|---|---|---|
| Lower Steiner Flat Road | County | Paved | Local/ Residential | 1,290 |
| Sky Ranch Road | County | Paved | Local/ Residential/ Scenic County Roadway | 76 |
| Dutch Creek Road | County | Paved | Local/ Residential | 950 at SR-299<br>147 at Red Hill Road |
| SR-299 | State | Paved | Highway/ Scenic Byway | 2,950 east of Junction City<br>1,900 west of Junction City |
| Red Hill Road | County | Paved | Minor Collector | 822 at Dutch Creek |

Sources: Caltrans Information: http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007; Smith, pers. comm. 2008

SR-299 is a designated truck route between the Sacramento Valley and the coastal communities of northern California. It is the main access corridor to Trinity County and provides primary access to the Trinity River, including the Proposed Project sites. Lower Steiner Flat Road, Sky Ranch Road, Dutch Creek Road, Red Hill Road, and Evans Bar Road are all located in the vicinity of the sites. These roads are part of Trinity County's road system and provide access to residential areas and federal and private timberlands via SR-299. There are a number of private roads that serve residences and provide access for forest management activities. Public access is often restricted by private land owners. In addition to using existing roads to access the rehabilitation sites, roads within the boundaries of the sites would be used to support various activities. New temporary access roads would be required to provide access for construction and monitoring activities.

Bicycle, pedestrian, and equestrian circulation is limited in the communities and residential neighborhoods that have developed along the Trinity River below Lewiston Dam. The Douglas City Community Plan contains goals to increase bicycle, pedestrian, and equestrian travel in this planning area. These community plan goals have not yet been implemented. However, pedestrians and equestrians use county and private roads that are adjacent to the river for exercise and recreational pursuits including Steiner Flat Road, Riverview Road, Poker Bar Road, Reo Lane, and Steel Bridge Road. The Junction City Community Plan also contains a goal to increase bicycle, pedestrian, and equestrian travel and safety by developing bicycle routes, trails, and pedestrian walkways. Red Hill Road runs parallel to the Trinity River along the south bank downstream of

Canyon Creek. This road was widened by Trinity County to include a bike lane, primarily to provide alternative transportation between local residences and Junction City Elementary School. Although bike lanes are not available on other roads in the general vicinity of Junction City, bicyclists, pedestrians, and equestrians use these roads for access, exercise, and recreational pursuits.

## 3.16.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.16.2.1 Methodology

A qualitative assessment of traffic impacts was performed, based on the construction procedures and equipment that would be used, local transportation policies, site review of existing conditions, and traffic levels on key roadways.

### 3.16.2.2 Significance Criteria

Significance criteria were developed based on Appendix G of the CEQA Guidelines, as well as project-specific issues identified during the scoping process (e.g., access during construction). For the project, significant construction-related impacts would result if the project would:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the county for designated roads or highways;
- Affect the form or function of SR-299, specifically bridges extending over the Trinity River and its tributaries;
- Affect the form or function of bridges under the jurisdiction of Trinity County or private parties;
- Disrupt existing traffic operations, including vehicular and bicycle traffic;
- Significantly degrade the existing conditions of local private roads;
- Obstruct access to adjacent land uses, including emergency access;
- Affect the operation of the local transit system;
- Conflict with adopted policies, plans, or projects supporting alternative transportation;
- Pose a safety hazard to motorists, bicyclists, equestrians or pedestrians;
- Cause substantial damage to or wear of public and private roadways; or
- Reduce available parking capacity.

### 3.16.2.3 Impacts and Mitigation Measures

Table 28 summarizes the potential transportation and traffic impacts that would result from implementation of the project.

**Table 25. Summary of Potential Transportation Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| 3.16-1. Construction activities would reduce/close existing traffic lanes. | | |
| No impact | Less than significant | Not applicable[1] |

| Table 25. Summary of Potential Transportation Impacts for the No-Project and Proposed Project Alternatives | | |
|---|---|---|
| **No-Project Alternative** | **Proposed Project** | **Proposed Project With Mitigation** |
| 3.16-2. Construction activities would generate short-term increases in vehicle trips. | | |
| No impact | Significant | Less than significant |
| 3.16-3. Implementation of the project would obstruct access to adjacent land uses. | | |
| No impact | Less than significant | Not applicable[1] |
| 3.16-4. Construction activities would increase wear and tear on local roadways. | | |
| No impact | Significant | Less than significant |
| 3.16-5. Construction activities could pose a safety hazard to motorists, bicyclists, pedestrians, and equestrians. | | |
| No impact | Significant | Less than significant |
| 3.16-6. Construction activities could affect the form or function of bridges under the jurisdiction of Caltrans, Trinity County, or private parties. | | |
| No impact | Less than significant | Not applicable[1] |

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

### Impact 3.16-1: Construction activities would reduce/close existing traffic lanes.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no construction-related reduction or closure of traffic lanes. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction activities associated with the Proposed Project would be managed to ensure that SR-299, Dutch Creek Road, and Lower Steiner Flat Road, the primary roads serving as access for the sites, would remain open to through-traffic. Temporary traffic control may be necessary during the mobilization and demobilization of heavy equipment; however, no road closures are planned. Passage for emergency vehicles would not be restricted. The adequate passage of traffic within and through the construction area in the event of an emergency evacuation is discussed in Section 3.13, Hazards and Hazardous Materials. Because any traffic control requirements associated with project access roads would be temporary, this impact would be less than significant.

### Impact 3.16-2: Construction activities would generate short-term increases in vehicle trips.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, short-term increases in vehicle trips would not occur because there would be no construction activities. Therefore, there would be no impact.

#### PROPOSED PROJECT

Construction activities associated with rehabilitation activities would require truck and worker vehicle trips on SR-299, Dutch Creek Road, and Lower Steiner Flat Road leading to and from the rehabilitation sites; thus, vehicle trips would increase on these roads. Construction equipment (e.g., large trucks, excavators, and back-hoes) would be mobilized to the sites prior to rehabilitation activities and would be removed upon completion of these activities. During the construction period, when the greatest number of workers and trucks would be required, 20 to 30 construction workers and their vehicles would need access to the sites daily. These vehicle trips would be added

to area roads on a recurring basis for the duration of rehabilitation activities at the sites. At the Lower Steiner Flat site, impacts could occur during Phase A implementation in 2012 and during implementation of Phase B.

Throughout construction, Reclamation would limit the amount of daily construction equipment traffic by staging the construction equipment and vehicles in the project boundary for the duration of work at each site. Post-construction activities (i.e., revegetation, maintenance, and monitoring) would require intermittent access for 3 to 5 years. Existing traffic volumes along SR-299, Dutch Creek Road, and Lower Steiner Flat Road are moderate, and the potential increase in traffic generated from construction would be localized and minimal.

#### MITIGATION MEASURES

Construction activities would generate short-term increases in vehicle trips. Therefore, mitigation measure 4.16-2a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Impact 3.16-3: Implementation of the proposed project would obstruct access to adjacent land uses.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, access to adjacent land uses would not be affected because no construction activities would occur. Therefore, there would be no impact.

#### PROPOSED PROJECT

As described in Section 3.1, land uses in and adjacent to the sites consist mainly of public and private forestry and other resource lands and private residential areas. Land uses in the Junction City Community Plan area that are near the Upper Junction City and Lower Junction City Sites include residential, logging and other resource uses, and recreation. Construction activities associated with the Upper Junction City and Lower Junction City sites would use primary access points on SR-299, Evans Bar Road, Sky Ranch Road, Dutch Creek Road, Red Hill Road, Hocker Flat Road, and various private roads. Land uses in the Douglas City Community Plan area that are near the Lower Steiner Flat Rehabilitation Site include residential, resource, commercial, mineral, and recreational uses. Construction activities associated with the Lower Steiner Flat site near Douglas City would use primary access points on SR-299, SR-3, Browns Mountain Road, Union Hill Road, Steel Bridge Road, River View Road, Steiner Flat Road, and various private roads. Access to adjacent public and private lands could be restricted for short periods of time using traffic control measures. Short-term recreational access to the Trinity River could be restricted, to varying degrees, during construction activities. Impacts at the Lower Steiner Flat site could occur during Phase A implementation in 2012 and during implementation of Phase B. However, several public access points would be available around these stretches of the river during the project implementation period, both upstream and downstream. Impacts related to recreational access and other recreational resources are discussed under Section 3.7, Recreation. Short-term access limitations coupled with the construction criteria described in Appendix A (Traffic Control/Detour) would result in an impact that is less than significant for the Proposed Project sites.

Impact 3.16-4: Construction activities would increase wear and tear on local roadways.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, there would be no wear and tear on local roadways. Therefore, there would be no impact.

#### PROPOSED PROJECT

SR-299 is a designated truck route that was built to withstand occasional use by heavy equipment. Other local roads over which project-related trucks and heavy equipment must pass may not be constructed or maintained to support substantial volumes of truck traffic. Numerous local roadways would provide access for construction-related activities, including roads under the jurisdiction of federal, state, and local agencies. Use of these roads by project-related trucks and heavy equipment would increase wear and tear on the local roadways and could result in adverse impacts on road conditions. The degree of impact would depend on roadway design and existing condition prior to the onset of TRRP activities. Because SR-299 was designed to accommodate a mix of vehicle types, including heavy trucks, the project is not expected to add significantly to roadway wear-and-tear on this highway.

While construction equipment would generally be staged on-site during construction, additional truck travel on local roads would be required when excavated material is used to replenish river gravel supplies. Project planning to use on-site coarse sediment would minimize heavy equipment use on local roads needed for access to the sites. Additionally, trucks carrying heavy equipment would operate within the legal weight limits as determined by the state. The number and types of activities could require some level of road reconstruction at select sites before or after Project implementation. The level of construction traffic could also require additional maintenance for some road segments in conjunction with various activities. Although standard construction and transportation practices would be implemented to reduce the potential adverse impacts on roadway conditions, the potential wear and tear on some roads under the Proposed Project would be a significant impact.

#### MITIGATION MEASURES

Construction activities would increase wear and tear on local roadways. Therefore, mitigation measure 4.16-4a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Impact 3.16-5: Construction activities could pose a safety hazard to motorists, bicyclists, pedestrians, and equestrians.

#### NO-PROJECT ALTERNATIVE

The No-Project alternative would not pose a safety hazard to motorists, bicyclists, pedestrians, and equestrians because there would be no construction activities. Therefore, there would be no impact.

#### PROPOSED PROJECT

Traffic safety hazards could arise for motorists, bicyclists, pedestrians, and equestrians in the vicinity of the construction access routes for the Project sites as a result of the movement of project-related trucks and heavy construction equipment. Impacts at the Lower Steiner Flat site could occur during both Phase A and Phase B implementation. Truck and equipment access to the

Trinity River during construction activities would be limited to designated routes to minimize public exposure to construction traffic. Trucks entering and exiting access roads off SR-299, Dutch Creek Road, and Lower Steiner Flat Road may pose a particular hazard to motorists, cyclists, and equestrians using the roadway. The safety hazard would be limited to brief and intermittent time periods; nevertheless, it would be significant.

#### MITIGATION MEASURES

Construction activities could pose a safety hazard to motorists, bicyclists, pedestrians, and equestrians. Therefore, mitigation measure 4.16-5a described in Appendix A will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Impact 3.16-6: Construction activities could affect the form or function of bridges under the jurisdiction of Caltrans, Trinity County, or private parties.

#### NO-PROJECT ALTERNATIVE

The No-Project alternative would not affect bridges under the jurisdiction of Caltrans, Trinity County, or private parties because there would be no construction activities. Therefore, there would be no impact.

#### PROPOSED PROJECT

A number of bridges over the Trinity River and/or its tributaries could be used to access the sites, depending on where the equipment is coming from. The hydraulic model (HEC-RAS) described in the Trinity River Master EIR, Section 4.4, Water Resources, has been used to integrate the hydraulic controls established by these constructed features. Modification of the form or function of these structures would not be affected by rehabilitation activities in close proximity to these sites. Therefore, this impact would be less than significant.

## 3.17 Tribal Trust

The United States has a trust responsibility to protect and maintain rights reserved by, or granted to, federally recognized Indian tribes and individual Indians by treaties, statutes, and executive orders. The Secretary of the Interior is the trustee for the United States on behalf of Indian tribes and individuals. The trust responsibility requires that all federal agencies, including Reclamation, take all actions reasonably necessary to protect and maintain Indian trust assets.

Indian trust assets are legal interests in property held in trust by the federal government for federally recognized Indian tribes or individual Indians. "Assets" are anything owned that has monetary value. "Legal interest" means that a property interest exists for which there is a legal remedy, such as compensation or injunction, if there is improper interference. Indian trust assets can be real property, physical assets, or intangible property rights, such as a lease or a right of use. While most Indian trust assets are located on-reservation, they can also be located off-reservation. Examples of Indian trust assets include, but are not necessarily limited to, land, natural resources, native plants and wildlife, cultural resources, minerals, hunting and fishing rights, water rights, and instream flow. Tribal trust resources are discussed in Section 7.17 of the Trinity River Master EIR.

## 3.17.1 Affected Environment/Environmental Setting

The need to restore and maintain the natural production of anadromous fish in the mainstem Trinity River is derived in part from the federal government's trust responsibility to protect the fishery resources of the region's Indian tribes. The Trinity River Basin Fish and Wildlife Restoration Act of 1984 (Public Law 98-541) expressly acknowledges tribal interests in the basin's fishery resources by declaring that the measure of successful restoration of the Trinity River fishery includes the "ability of dependent tribal…fisheries" to participate fully, through enhanced in-river "harvest opportunities, in the benefits of restoration." In addition, the 1992 CVPIA specifically recognizes the federal trust responsibility in regard to the Trinity River fishery. The project could potentially affect anadromous fish, non-anadromous fish, water, wildlife, vegetation, and overall riverine health; these impacts in turn could affect the sociocultures and economics of tribes.

This section focuses principally on the interests of the HVT and YT because, of the Indian tribes of the Klamath/Trinity Region, their interests could be the most directly affected by the project. It should be understood, however, that potential project impacts are pertinent to the Karuk and Klamath people as well, since they share a common regional heritage.

### 3.17.1.1 Regional Setting

In 1855, President Pierce established the Klamath River Reservation. The reservation was designated as a strip of territory commencing at the Pacific Ocean and extending 1 mile in width on each side of the Klamath River for a distance of approximately 20 miles. Although the federal government's intent was to eventually move all the region's Indians onto the Klamath River Reservation, only some Yurok and Tolowa were moved. In 1864, the USDI issued a proclamation and instructions that established the Hoopa Valley Reservation on the Trinity River pursuant to legislation enacted by Congress that same year. The reservation is 12 miles square and bisected by 15 miles of the river (it has often been called the Square or the 12-mile Square). In 1876, President Grant issued an Executive Order formally establishing the boundaries of the Hoopa Valley Reservation.

Efforts soon began to provide a single contiguous homeland for the region's Indian people by connecting the Klamath River Reservation to the Hoopa Valley Reservation. In 1891, President Harrison extended the Hoopa Valley Reservation from the mouth of the Trinity River to the ocean, thereby encompassing and including the Hoopa Valley Reservation, the original Klamath River Reservation, and the intervening connecting strip. In 1988, Congress, under the Hoopa-Yurok Settlement Act, separated the Hoopa Valley Reservation into the present Yurok Reservation (a combination of the original Klamath River Reservation and other lands) and Hoopa Valley Reservation.

### 3.17.1.2 Indian Federally Reserved Rights

The United States has a trust responsibility to protect tribal trust resources. In general, this tribal trust responsibility requires that the United States protect tribal fishing and water rights, which are held in trust for the benefit of the tribes (U.S. Department of the Interior 1995). This trust responsibility is one held by all federal agencies. For projects under the auspices of the TRRP, Reclamation is obligated to ensure that these projects do not interfere with the tribes' senior water rights. Pursuant to its trust responsibility and consistent with its other legal obligations,

Reclamation must also prevent activities under its control that would adversely affect Tribal fishing rights, even when those activities take place off-reservation.

#### FISHING RIGHTS

Salmon, steelhead, sturgeon, and lamprey that spawn in the Trinity River pass through the Hoopa Valley and Yurok Reservations and are harvested in tribal fisheries. The fishing traditions of these tribes stem from practices that far pre-date the arrival of non-Indians. Accordingly, when the federal government established what are today the Hoopa Valley and Yurok Indian Reservations on the Trinity and Lower Klamath Rivers, it reserved for the benefit of the Indian tribes of those reservations a right to the fish resources in the rivers running through them. The federally reserved fishing rights of the YT and HVT entitle them to take fish for ceremonial, subsistence, and commercial purposes. The federal government, as trustee, has an affirmative obligation to manage federally reserved Indian rights for the benefit of federally recognized Indian tribes. Federally reserved Indian fishing rights are vested property rights held in trust by the United States for the benefit of the Indians.

#### WATER RIGHTS

In addition to fish, the tribes have reserved rights to water. The concept of reserved rights in general, and Indian reserved water rights specifically, originated just after the start of the 20th century with *Winters v. United States,* 207 U.S. 564 (1908). The ruling in this case, commonly referred to as the Winters Doctrine, states that when the federal government established a reservation, it implicitly reserved a quantity of water necessary to fulfill the purpose of said reservation. The USDI Solicitor's office reaffirmed these rights with respect to Reclamation's activities, stating "Reclamation is obligated to ensure that project operations not interfere with the Tribes' senior water rights.

#### RIGHTS TO WILDLIFE AND VEGETATION RESOURCES

While the focus of the legal history surrounding Indian rights to resources has concentrated on water and fisheries, other resources, such as wildlife and vegetation, are also extremely important to the tribes, and the tribes have assessed that these resources are no less reserved. In the case of the HVT and YT, the decline in the health of the region's rivers has limited the availability of grasses and other plants important to traditional basketry, art, and medicine. Thus, while anadromous fish are the focus of the TRRP, other trust assets, such as vegetation, are embodied in the federal government's trust responsibility and, accordingly, need to be considered in the decision-making process.

#### CULTURAL ENVIRONMENT

Native uses of natural resources and the cultural significance of those resources have developed over many centuries, during the time that native people have lived in the heavily forested drainages of the Klamath and Trinity rivers and adjacent streams in northwestern California. Hunting, fishing, and gathering were the foundation of their societies. Tribes in the area included the Chilula, Hoopa Valley, Nongatl, Tsnungwe, and Whilkut, which spoke Athabascan languages; the Chimariko, Karuk, and Shasta, which spoke Hokan languages; the Wintun, which spoke a Penutian language; and the Wiyot and Yurok, which spoke Algonkian languages.

Some of these tribes, such as the Chilula, no longer exist. Others, including the Chimariko and Wintu, have not been officially recognized by the United States as a distinct and sovereign people.

Among the Indian peoples still present in the region, only the Hoopa Valley, Yurok, Karuk, and Klamath tribes have received this recognition.

Strong social, cultural, and economic ties have existed through history among the tribes of the Klamath/Trinity Basin, based in large part on a shared reliance on the region's rivers and associated resources, particularly salmon. This reliance extends well beyond subsistence and commerce to the cultural and social fabric of their societies, as evidenced by their traditional, ceremonial, and spiritual ways of life that focus and center on the rivers and the fish, wildlife, and vegetation they support. For Indians of the Klamath/Trinity Basin, the interaction and identification with the natural environment define their cultures, lifestyles, and religions; therefore, the degradation of the natural environment has had a profoundly devastating impact.

#### PROPOSED PROJECT SITES

Based on consultation between the tribes and Reclamation, the Proposed Project sites contain Trust assets, including fish, vegetation, and wildlife. Corresponding sections of this document provide discussions of these resources. While no specific use of these sites by the tribes has been identified, the Trinity River provides a valuable corridor that connects these resources to the HVT and YT.

## 3.17.2 Environmental Consequences/Impacts and Mitigation Measures

The purpose of this section is to evaluate the potential impacts of the alternatives on tribal trust assets and the subsequent effects those impacts may have on the Indian tribes of the Klamath/Trinity Basin.

### 3.17.2.1 Methodology

While the project is aimed at improving the river's anadromous fisheries, an assessment of how project construction may actually affect the Indian trust assets of the HVT and YT must be performed, as directed in the USDI Departmental Manual (Part 512, Chapter 2), and Reclamation's Indian Trust Asset Policy. Toward this end, the Indian trust asset impact evaluation focuses on the potential effects of the rehabilitation activities described in Chapter 2 on the health of the Trinity River. Because the river's overall health is a primary factor in determining the availability of fish, the potential tribal trust impacts are not evaluated on an asset-by-asset basis.

### 3.17.2.2 Significance Criteria

Under CEQA, lead agencies are not explicitly required to consider projects' impacts on tribal trust assets as a distinct category of impacts. With its focus on the physical environment, CEQA requires agencies to focus on impacts to environmental resources, some of which, such as fish, wildlife, and water quality, would be indirectly related to tribal trust values. Therefore, the significance criteria applied in this evaluation of potential consequences on tribal trust assets are general and based on the potential for components of the Proposed Project to result in any modification of, or change in, the quantity or quality of tribal trust assets.

Although CEQA does not expressly require the application of specific significance criteria for potential impacts to Indian trust assets, federal lead agencies evaluating proposed actions under NEPA typically include the evaluation of potential impacts to Indian trust assets as a distinct category of impacts. Accordingly, this evaluation assessed the impacts of the proposed activities described in this document relative to any modification or change in the value, use, quantity, quality, or enjoyment of downstream Indian trust assets.

### 3.17.2.3 Impacts and Mitigation Measures

Table 29 summarizes potential impacts on Indian trust assets that would result from implementation of the proposed project.

**Table 26. Summary of Potential Tribal Trust Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project With Mitigation |
|---|---|---|
| Impact 3.17-1. Implementation of the project may reduce the quantity or quality of Tribal trust assets. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.17-1: Implementation of the proposed project may reduce the quantity or quality of Tribal trust assets.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, mechanical channel rehabilitation activities would not be implemented at the Proposed Project sites; therefore, no direct impact to Tribal trust assets would occur as a result of the project. However, implementation of other activities to improve the fishery and other resources of the mainstem Trinity River could still be undertaken. Thus, under the No-Project alternative, the overall benefits to Tribal trust assets gained through implementation of the overall TRRP would likely be achieved but the benefits associated with river rehabilitation at the Proposed Project sites would not be realized.

#### PROPOSED PROJECT

Under the Proposed Project the Trinity River would continue to support tribal trust assets. The short-term impacts described in sections pertaining to geology, fluvial geomorphology, and soils; water quality; fishery resources; and vegetation, wildlife, and wetlands would occur if the project is implemented. These impacts are expected to be short-term and to be outweighed by the overall benefits to Tribal trust assets gained through implementation of the overall TRRP and the Proposed Project. Therefore, this impact is less than significant.

## 3.18 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994, requires federal agencies to identify and address adverse human health or environmental effects of their actions on minorities and low-income populations and communities as well as the equity of the distribution of the benefits and risks of their decisions. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group of people should bear a disproportionate share of negative impacts from an environmental action.

To comply with the environmental justice policy established by the Secretary of the Interior, all USDI agencies are to identify and evaluate any anticipated effects, direct or indirect, from a project, action, or decision on minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. Accordingly, this section examines the anticipated impacts of the Proposed Project with respect to potentially affected minority and economically disadvantaged groups. Socioeconomic issues, including population and housing, are evaluated in

this document in Section 3.8, Socioeconomics. This section does not function as part of the IS portion of this joint document, because CEQA does not require state or local agencies to address environmental justice concerns in an IS.

## 3.18.1 Affected Environment/Environmental Setting

The Trinity River is a valuable economic resource for Trinity County. Its popularity as a recreation destination, particularly for fishing, white-water recreation, gold panning, and as an access point to the Salmon-Trinity Alps, directly benefits communities such as Lewiston, Douglas City, and Junction City through increased business patronage. Businesses benefit during peak recreation-use periods (e.g., rafting, kayaking, and fishing). Other economic opportunities such as agriculture are severely limited by the surrounding topography; thus, minimizing the attraction for a transitional labor pool.

The U.S. Census uses a set of income limits that vary by family size and composition to determine who is in poverty. If a family's total income is less than the income limit, then that family, and every individual in it, is considered to be in poverty. Poverty income level thresholds are nationwide standards set by the Census. The formula for the poverty rate is the number of persons below the poverty level divided by the number of persons for whom poverty status is determined. In 2009, 18.2 percent of the population in Trinity County was living in poverty compared to 14.2 percent for the state of California as a whole. The 2009 median household income for Trinity County was $33,546, compared to the median California income of $58,925 (U.S. Census Bureau 2011).

In 2010 the vast majority of the population in Trinity County (approximately 87 percent) consisted of white individuals (U.S. Census Bureau 2011). The largest minority population in the county is Hispanic. In 1990, the Hispanic population was 3.3 percent of the county's total population. By 2010, the percentage had increased to 7.0 percent of the total, compared to 37.6 percent in California as a whole. The American Indian population constitutes the next largest minority group. In 2010, American Indians constituted 4.8 percent of the total county population, compared to 1 percent for California (U.S. Census Bureau 2011). The percentage of black and Asian residents in the county is small (each less than 1 percent).

Census statistics are not available for Junction City. However, statistics are available for the zip code (96048) that includes Junction City (U.S. Census Bureau 2000). The Junction City community is predominately white (91.7 percent) (U.S. Census Bureau 2000). The proportion of individuals living below the poverty level for this area (12.7 percent) is similar to the balance of the United States (12.4 percent) (U.S. Census Bureau 2000). Census statistics are also available for the zip code (96024) that includes Douglas City (U.S. Census Bureau 2008). This community is predominately white (90.4 percent) and, according to the 2000 census, the proportion of people in this area living below the poverty level (18.0 percent) is higher than for the balance of the United States (12.4 percent).

## 3.18.2 Environmental Consequences/Impacts and Mitigation Measures

### 3.18.2.1 Methodology

The EPA compares three factors—minority representation, low-income representation, and environmental burden—for a community of concern and one or more reference areas—for example,

an entire county—to analyze potential environmental justice impacts. A community of concern can be defined in a number of ways, including a municipality, a census block group, a user-defined radius around a source of pollution, or a boundary drawn along physical features such as streets, streams, or railroad tracks. The demographic data for the community of concern can then be analyzed to determine whether there would be a potential environmental justice concern in the area. As part of this analysis, poverty levels and minority population levels were examined for Trinity County as a whole and for the residential areas associated with Junction City and Douglas City, although only a limited amount of information was available for those areas.

### 3.18.2.2 Significance Criteria

Because environmental justice is not a CEQA issue, specific significance criteria were not applied in evaluating potential environmental justice consequences. Instead, any modification or change in environmental justice factors that would occur in response to the Proposed Project is evaluated in accordance with NEPA requirements.

### 3.18.2.3 Impacts and Mitigation Measures

Table 30 summarizes the potential environmental justice impacts that would result from implementation of the project.

**Table 27. Summary of Potential Environmental Justice Impacts for the No-Project and Proposed Project Alternatives**

| No-Project Alternative | Proposed Project | Proposed Project with Mitigation |
|---|---|---|
| Impact 3.18-1. Implementation of the project could adversely affect a minority or low-income population and/or community. | | |
| No impact | Less than significant | Not applicable[1] |

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

Impact 3.18-1: Implementation of the proposed project could adversely affect a minority or low-income population and/or community.

#### NO-PROJECT ALTERNATIVE

Under the No-Project alternative, no impact to a minority or low-income population or community would occur because the project would not be constructed. Therefore, there would be no impact.

#### PROPOSED PROJECT

Although minority and low-income residents live in the vicinity of the project, the impacts would generally be experienced by residents in relationship to their proximity to the sites, regardless of their racial or income characteristics. There is no evidence to suggest that the project would cause a disproportionately high adverse human health or environmental effect on minority and low-income populations compared to other area residents. The known health risks to residents that could be associated with the project are evaluated in the Water Quality, Air Quality, Hazardous Materials, and Noise sections of this document. For the most part, these health risks are associated with construction aspects of the project, in that residents and construction workers could be exposed to hazardous materials that may be associated with the project. Possible health risks also include construction-related accidents. Reclamation would manage the project to minimize these risks, as required by applicable federal and state safety regulations. Therefore, no disproportionate or specific health risks or other impacts to low-income groups would be associated with the project.

# Chapter 4

# 4 CUMULATIVE EFFECTS AND OTHER CEQA AND NEPA CONSIDERATIONS

This EA/IS tiers from the "statutory considerations" discussion in the Trinity River Master EIR (Chapters 5 and 8). These discussions cover certain topics required under CEQA, such as cumulative impacts, the significant environmental effects of the Proposed Project, the significant effects that cannot be avoided if the Proposed Project is implemented, and growth-inducing effects of the project. Additional discussions are also required under NEPA, such as the significant irreversible and irretrievable commitments of resources and the relationship between local short-term uses of the environment and the maintenance of long-term productivity. These considerations are summarized below; see the Trinity River Master EIR for complete discussions of these topics.

## 4.1 Cumulative Impacts

The regulatory framework for the assessment of cumulative impacts under CEQA is discussed in Chapter 5, Section 5.2.1, of the Trinity River Master EIR, and the regulatory framework for NEPA is discussed in Chapter 8, Section 8.2.1. Under the CEQA Guidelines (Section 15355), the term "cumulative impacts" refers to two or more individual impacts that, when considered together, are considerable or that otherwise compound or increase other environmental effects. Cumulative environmental impacts arise from the incremental impacts of the Proposed Project when added to other closely related past, present, and reasonably foreseeable future projects.

The CEQ NEPA implementing regulations (40 CFR 1508.7) state that cumulative impacts result from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

### 4.1.1 Methodology and Analysis

The methodology for the cumulative impact analysis in this document is described in section 5.2.2 of the Trinity River Master EIR. As discussed in that section, the methodology involved the assessment of the potential cumulative effects of the Proposed Project when considered in combination with a list of related projects within a defined geographical area. This assessment of cumulative impacts is considered in the same cumulative context—i.e., using the same list of related projects and programs and within the project boundaries.

The issue-specific analysis of cumulative impacts in Chapter 5 of the Trinity River Master EIR identifies the potential cumulative impacts related to the Remaining Phase 1 and Phase 2 sites for a variety of resource areas. Because activity will occur within the Lower Junction City site boundary both as part of this project and when the Lower Junction City Rehabilitation Site project occurs at some point in the future, there is the potential for cumulative impacts in that location. The fact that the two projects will occur at different times and that mitigation measures will be implemented as

part of both projects, will reduce the potential for cumulative impacts. Other than in that location, no additional cumulative impacts have been identified that are specific only to the Proposed Project sites. The previous issue-specific analysis in Chapter 5 sufficiently addresses the cumulative impacts of the Proposed Project, and no substantial differences arise in consideration of the Proposed Project separately. Table 31 summarizes the cumulative impact findings.

| **Table 28. Summary of Cumulative Impacts Findings from the Trinity River Master EIR** | |
|---|---|
| Land Use | Implementation of the Proposed Project, in combination with other related projects, would not have a cumulative impact in terms of planning policies, nor would river rehabilitation activities result in cumulative effects in terms of local or federal land use planning policies. |
| Geology, Fluvial Geomorphology, and Soils | No significant cumulative impacts associated with geologic hazards, geomorphic processes, or erosional processes are anticipated to occur as a result of implementation of the Proposed Project in combination with other related projects. Appropriate implementation of prescribed mitigation measures would reduce potential impacts to a less-than-significant level. |
| Water Resources | Implementation of the Proposed Project in combination with other river rehabilitation activities would not have cumulatively considerable impacts on beneficial uses of the river or result in changes in the quantities of water available for any of those uses. |
| Water Quality | No significant cumulative impacts to water quality are anticipated to occur as a result of implementation of the Proposed Project in combination with other related projects. Individually, these activities would result in short-term, temporary effects on water quality. Appropriate implementation of prescribed mitigation measures would reduce potential impacts to a less-than-significant level. |
| Fishery Resources | No significant, adverse, cumulative impacts to fisheries resources are anticipated to occur as a result of the implementation of the Proposed Project. The effect of the Proposed Project, in conjunction with other projects and programs, is expected to be beneficial in terms of the rehabilitation of habitat and fisheries resources. Implementation of the Proposed Project as mitigated would benefit, rather than adversely affect, fishery resources of the Trinity River in the long term. |
| Vegetation, Wildlife, and Wetlands | No significant cumulative impacts to vegetation, wildlife, and wetlands are anticipated to occur as a result of implementation of the Proposed Project in combination with other related projects. The project as mitigated would benefit, rather than adversely affect, vegetation, wildlife, and wetlands in the long term, as would most of the other related projects and programs. Implementation of the Proposed Project would contribute to long-term ecological benefits in terms of vegetation, wildlife, and wetlands. |
| Recreation | No significant cumulative impacts to recreational resources are anticipated to occur as a result of implementation of the Proposed Project in combination with other related projects. Benefits to recreational values may be achieved through the implementation of the TRRP over time. |
| Socioeconomics, Population, and Housing | No significant cumulative impacts to socioeconomics, population, and housing are anticipated to occur as a result of implementation of the Proposed Project. The related projects and programs described in the cumulative effects analysis in the Trinity River Master EIR are intended to benefit the Trinity River fishery, with moderate projected economic and social benefits to the residents and communities along the Trinity River. |
| Cultural Resources | No significant cumulative impacts to cultural resources are anticipated to occur as a result of implementation of the Proposed Project. Appropriate implementation of prescribed mitigation measures (e.g., surveys of potential impact areas by a professional archaeologist prior to construction, protection of potentially significant cultural sites, and coordination with local tribes), in coordination with the SHPO, would adequately mitigate for potential impacts, including cumulative impacts. |

| | |
|---|---|
| Air Quality | No significant cumulative impacts to air quality are anticipated to occur as a result of implementation of the Proposed Project. The NCUAQMD requirements would be addressed by implementation of prescribed mitigation measures. The Proposed Project, in conjunction with the other projects and programs occurring within the Trinity River basin, would contribute cumulatively to global climate change. Thus, the Proposed Project would contribute to an adverse cumulative contribution to global climate change. Implementation of mitigation measures would reduce the cumulative contribution to global climate change to a less-than-significant level. |
| Aesthetics | No significant cumulative impacts to aesthetics are anticipated to occur as a result of implementation of the Proposed Project. Implementation of the Proposed Project would benefit, rather than adversely affect, aesthetics in the long term, as would most of the other related projects described in the cumulative effects analysis in the Trinity River Master EIR. |
| Hazardous Materials | No significant cumulative impacts related to hazardous materials are anticipated as a result of implementing the Proposed Project in combination with other related projects. |
| Noise | No significant cumulative impacts related to noise are anticipated through implementation of the Proposed Project in combination with other projects. Reclamation would coordinate the implementation of other restoration projects to ensure that construction noise is minimized through project scheduling. |
| Public Services and Utilities/Energy | No significant cumulative impacts related to public services and utilities/energy are anticipated as a result of implementation of the Proposed Project in combination with other related projects. The rehabilitation activities are designed in ways that ensure that emergency services would not be disrupted; that public services (e.g., school bus routes) would not be adversely affected; and that waste material generated from project activities would be transported appropriately to authorized locations. |
| Transportation/ Traffic Circulation | No significant cumulative impacts related to transportation/traffic circulation are anticipated through the implementation of the Proposed Project in combination with other related projects. Traffic increases would be localized and temporary. |
| Tribal Trust Assets | No significant cumulative impacts to Tribal trust assets are anticipated to occur as a result of implementation of the Proposed Project. The related projects and programs described in Chapter 5 of the Trinity River Master EIR, in combination with the Proposed Project, are expected to cumulatively result in beneficial effects to the Tribal trust assets, including the overall health of the Trinity River and its fishery resources. |
| Environmental Justice | No disproportionate environmental effects on minority or low-income populations have been identified for either the Remaining Phase 1 or Phase 2 sites, and no significant cumulative impacts to environmental justice are anticipated to occur as a result of the implementation of the Proposed Project. Implementation of the Proposed Project, in conjunction with the other related projects and programs described in Chapter 5 of the Trinity River Master EIR, is anticipated to provide a net benefit to the local communities by helping to restore the Trinity River's fishery resources. |

## 4.2 Irreversible and Irretrievable Commitments of Resources

NEPA (Section 102) and the CEQ NEPA implementing regulations (40 CFR 1502.16), require a discussion of "any irreversible and irretrievable commitments of resources which would be involved in a Proposed Action should it be implemented."

Section 15126.2(c) of the CEQA Guidelines also requires a discussion of the significant irreversible environmental changes that would result from the Proposed Project should it be implemented. This section of the CEQA Guidelines states:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway

improvements which provide access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The No-Project alternative would not directly involve the use of resources or cause significant irreversible environmental effects other than those previously described in the Trinity River FEIS/EIR (USFWS et al. 2000a) and incorporated by reference in other sections of this document.

Implementation of the Proposed Project would not involve the substantial use of nonrenewable resources in such a way that would result in conditions that would be irreversible though removal or nonuse thereafter. Future generations would not be committed to irreversible consequences or uses; the effect on future generations would be beneficial as a result of the enhanced and maintained river system and related fishery resources. No irreversible damage from environmental accidents would be foreseeable in association with the Proposed Project.

Implementation of the Proposed Project would result in the use of fossil fuels, a nonrenewable form of energy. A relatively minor amount of nonrenewable resources would be used in the mechanical rehabilitation of the river channel, transport of gravel, and related construction and management activities at the rehabilitation. The material requirements for this project would be relatively minor compared to the overall demand for such materials, and the use of these materials would not have a significant adverse effect on their continued availability.

## 4.3 Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Section 102 of the CEQ NEPA Regulations and CFR 1501.16 require that an environmental document include a discussion of "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity." This discussion was included in Section 8.4 of the Trinity River Master EIR.

The Proposed Project does not involve a trade-off between a "local short-term use" of the environment and the maintenance and enhancement of the environment in the sense contemplated by NEPA. Implementation of the Proposed Project is intentionally aimed at maintaining and enhancing the long-term biological and environmental productivity of the river system. Implementation of the Proposed Project would not sacrifice the long-term productivity of the sites for short-term uses during construction.

The short-term impacts on the environment associated with implementation of the Proposed Action are considered minimal compared to the long-term benefits and productivity that would result from the Proposed Action in conjunction with other objectives of the TRRP. Construction-related impacts and land use conflicts would be short-term, occurring only during the construction phase of the project. While such impacts are considered significant (in a CEQA sense), they would be mitigated to less-than-significant levels.

## 4.4 Growth-Inducing Impacts

Section 5.3 of the Trinity River Master EIR evaluated the potential for growth that could be induced by implementation of the Proposed Project and assessed the level of significance of any expected

growth inducement. Under CEQA, growth itself is not assumed to be particularly beneficial, detrimental, or insignificant to the environment. If a project is determined to be growth inducing, an evaluation is made to determine whether significant impacts on the physical environment would result from that growth.

Implementation of channel rehabilitation activities and sediment management activities at the Proposed Project sites would not remove any constraints to development, create new or improved infrastructure, or otherwise create conditions that would induce growth. The Proposed Project would improve habitat for anadromous fish and, thus, improve conditions for fishing and recreation; however, the improved fishery resources resulting from implementation of the Proposed Project are not likely to directly or indirectly result in substantial development or population growth. Therefore, implementation of the Proposed Project would not result in a significant growth-inducing impact.

## 4.5 Environmental Commitments and Mitigation Measures

Reclamation's NEPA implementation guidance recommends that a list of environmental commitments for the preferred alternative be included in an EA. The list should contain all mitigation measures and management actions that are incorporated in the project as part of the proposal. Because this document is a joint NEPA/CEQA document, mitigation measures have been identified for potentially significant impacts in compliance with CEQA requirements. Under CEQA, lead agencies are required to adopt a program for monitoring or reporting on the revisions that they required be made part of the project and other measures required to mitigate or avoid significant environmental effects. The MMRP for implementation of the Proposed Project complies with Reclamation's practice to include a list of environmental commitments in an EA/IS. The MMRP is included as Appendix E of the Trinity River Master EIR. A site specific MMRP for the Proposed Project is included as Appendix A of this document.

## 4.6 Significant Effects

CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible (CEQA Guidelines Section 15021), and determinations of significance play a critical role in the CEQA process (CEQA Guidelines 15064). Section 5.4 of the Trinity River Master EIR addresses several types of potentially significant effects.

Potentially significant effects have been identified in the areas of geology, geomorphology, soils, and minerals; water quality; fishery resources; vegetation, wildlife, and wetlands; recreation; cultural resources; air quality; aesthetics; noise; public services and utilities; and traffic and transportation. These potential effects are discussed in each resource. As part of the environmental impact assessment for each resource area, mitigation measures have been identified that reduce these impacts to less-than-significant levels. The environmental analysis conducted for the Proposed Project did not identify any effects that, after mitigation, remained significant and therefore unavoidable; no significant irreversible effects were identified associated with the Proposed Project.

# 5 LIST OF PREPARERS

## 5.1 Bureau of Reclamation

### 5.1.1 Trinity River Restoration Program Office

| | |
|---|---|
| Robin Schrock | Executive Director |
| F. Brandt Gutermuth | Environmental Scientist |
| David Bandrowski, P.E. | Implementation Branch Chief/Project Engineer |
| Amanda Brooks | Biological Scientist |
| Diana Clifton | Realty Specialist |
| David Gaeuman, Ph.D. | Geomorphologist |
| Andreas Krause, P.E. | Physical Scientist |

### 5.1.2 Mid-Pacific Region Office

| | |
|---|---|
| Laurie Perry | Regional Archaeologist |
| Adam Nickels | Archaeologist |
| John Fogerty | Archaeologist Technician |

## 5.2 Bureau of Land Management

| | |
|---|---|
| Francis Berg | Chief of Natural Resources |
| Eric Ritter, Ph.D. | Archaeologist |
| William Kuntz | Recreation Planner |
| Gary Diridoni | Wildlife Biologist |
| Walter Herzog | Forester |
| Ron Rogers | Geologist |

## 5.3 Trinity County Resource Conservation District

| | |
|---|---|
| Pat Frost | District Manager |
| Alex Cousins | Assistant Manager |
| Christy Wagner | Vegetation Specialist |

## 5.4 Regional Water Quality Control Board – North Coast Region

| | |
|---|---|
| Dean Prat, P.G. | Engineering Geologist |
| Samantha Olsen | Staff Counsel |

## 5.5 California Department of Water Resources

| | |
|---|---|
| Scott Kennedy, P.E. | Civil Engineer |
| Teresa Connor, P.E. | Supervisory Engineer |

## 5.6 North Wind Services, LLC

| | |
|---|---|
| Joe Rothermel | Project Manager |
| Jace Fahnestock, Ph.D. | Natural Resource Manager |
| Kelly Green | Ecologist/Environmental Specialist |
| Tim Funderburg | Graphic Production/GIS Specialist |
| Denise Stark | Natural Scientist/Botanist |

*page left intentionally blank*

# REFERENCES


Alabaster, J.S., and R. Lloyd. 1980. Water quality criteria for freshwater fish. Buttersworth, Inc. Boston, Massachusetts.

Alaska Department of Environmental Conservation. 2008. Water quality standards. Register 186 July 2008. Available at: http://www.dec.state.ak.us/water/wqsar/wqs/pdfs/18%20AAC_70_WQS_Amended_July_1_2008.pdf

Alvarez, J., D. Goodman and A. Martin. 2010. Assessment of changes in anadromous salmonid habitat at selected channel rehabilitation sites on the Trinity River, CA. Oral presentation provided at the 2010 Trinity River Science Symposium.

Association of Environmental Professionals. 2009. California Environmental Quality Act 2009. CEQA guidelines. Palm Desert, California.

Association of Environmental Professionals. 2008. California environmental quality act: Statutes and guidelines. Association of Environmental Professionals.

Berg, L., and T.G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. Canadian Journal of Fisheries and Aquatic Sciences 42:1410-1417.

Bolt, Beranek, and Newman, Inc. 1971. Noise from construction equipment and operations, building equipment, and home appliances. Prepared for the U.S. Environmental Protection Agency. Washington, D.C. December 1971.

Bradley, W.W. 1941. Quarterly chapter of State Mineralogist's report. California Journal of Mines and Geology 37(1).

Brown-Buntin. 2002. Draft noise element of the General Plan, Trinity County, California. Prepared for the Trinity County Planning Department. May 2002.

BuildCarbonNeutral. 2007. Construction carbon calculator 0.035.

Bustard, D.R., and D.W. Narver. 1975. Aspects of the winter ecology of juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Salmo gairdneri*). Journal of the Fisheries Research Board of Canada 32:667-680.

California Air Resources Board. 2008. Air quality data statistics: California Air Resource Board.

California Department of Fish and Game (CDFG). 2003a. California Salmonid Stream Habitat Restoration Manual, Part IX Fish Passage Evaluation at Stream Crossings.

CDFG. 2003b. California natural diversity database (CNDDB). California Department of Fish and Game. Updated 2008.

CDFG. 2011a. Draft Supplemental Environmental Impact Report for the Suction Dredge Permitting Program. February 2011.

CDFG. 2011b. Draft Environmental Document Regarding Bear Hunting (Sections 365, 366, 367.5, 401, 708 Title 14, California Code of Regulations). Sacramento, California. 117 p.

CDFG. 2012. Black Bear Biology. Retrieved from the internet. http://www.dfg.ca.gov/wildlife/hunting/bear/biology.html

California Department of Transportation (Caltrans). 2008. The traffic data branch. http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/ (accessed 2008).

California Department of Water Resources (DWR). 2007. Trinity River hydraulic flow study: North Fork Trinity to Lewiston Dam. State of California, The Resources Agency, Department of Water Resources, Northern District. July 2007.

California Employment Development Department. 2008. California labor force data, not seasonally adjusted, 1990–current. California Employment Development Department.

California Employment Development Department. 2011. California Labor Market Local Area Profile for Trinity County. http://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=Trinity+County&selectedindex=53&menuChoice=localAreaPro&state=true&geogArea=0604000105&countyName=. Accessed February 9, 2011.

California Office of Planning and Research. 2008. CEQA and climate change: Addressing climate change through California Environmental Quality Act (CEQA) review. Technical Advisory.

Cardno Entrix and CH2MHill. 2011. Final Report, Trinity River Large Wood Analysis and Recommendation Report. Prepared for Trinity River Restoration Program. January 2011.

Cederholm, C.J., R.E. Bilby, P.A. Bisson, T.W. Bumstead, B.R. Fransen, W.J. Scarlett, and J.W. Ward. 1997. Response of juvenile coho salmon and steelhead to placement of large woody debris in a coastal Washington stream. North American Journal of Fisheries Management 17:947-963.

Center for Economic Development. 2007. Trinity County 2007 economic and demographic profile. California State University, Chico Research Foundation.

CH2MHill. 2011. Lower Steiner Flat Final Design Report. Prepared for TRRP. January 2011.

Chien, N. 1985. Changes in river regime after the construction of upstream reservoirs. Earth Surface Processes and Landforms 10: 143-159.

Colby, W.H. 1982. A century of transportation in Shasta County, 1821–1920. Association for Northern California Records and Research Occasional Paper 7.

Cox, I. 1958. Annals of Trinity County. Trinity 1958. Trinity County Historical Society. Weaverville, California.

Environmental Protection Agency (EPA). 1999. Title 40 - Protection of Environment. Chapter 1. Environmental Protection Agency. Part 131ÁWater Quality Criteria: U.S. Code of Federal Regulations, Title 40, Part 131: 40 CFR 131, revised July 1, 1999.

EPA. 2001. Trinity River total maximum daily load for sediment. December 20, 2001.

Federal Emergency Management Agency. 1996. Flood insurance study: Trinity County, California, and incorporated areas. Revised April 17, 1996.

Federal Highway Administration. 1983. Visual impact assessment for highway projects. (Contract DOT-FH-11-9694.)

Glase, J.D. 1994. Progress report: Evaluation of artificially constructed side channels as habitat for salmonids in the Trinity River, northern California, 1991-1993. U.S. Fish and Wildlife Service, Trinity

River Restoration Program, Trinity River Fishery Resource Office, Weaverville, CA. September. 55pp.

Graham Matthews and Associates. 2010. Trends in Substrate Composition of the Trinity River, 1991-2009. Report to the USDI Bureau of Reclamation Trinity River Restoration Program. 53 pp.

Gutermuth, B. Personal observation. U.S. Bureau of Reclamation, TRRP.

Hampton, M. 1988. Development of habitat preference criteria for anadromous salmonids of the Trinity River. U.S. Fish and Wildlife Service, Division of Ecological Services.

Harvey, B. C., and J. L. White. 2008. Use of benthic prey by salmonids under turbid conditions in a laboratory stream. Transactions of the American Fisheries Society 137:1756-1763.

Hassler, T.J. 1987. Species profiles: Life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest)--coho salmon. U.S. Fish and Wildlife Service Biological Report 82(11.70).

Herrera, P.A. 2006. Trinity River restoration program bird monitoring: Indian Creek environmental study limit surveys, 2003-2005. Draft. USDA Forest Service, Redwood Sciences Laboratory. March 15, 2006.

Hicks, B.J., J.D. Hall, P.A. Bisson, and J.R. Sedell. 1991. Responses of salmonids to habitat changes. In Influences of forest and rangeland management on salmonid fishes and their habitats, edited by W. R. Meehan. American Fisheries Society, Bethesda, Maryland.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Natural Heritage Division, California Department of Fish and Game. Sacramento, California.

Hoopa Valley Tribe (HVT) Fisheries Department, McBain and Trush, Inc., Northern Hydrology & Engineering. 2010. Draft - Channel rehabilitation design guidelines for the mainstem Trinity River. May 28. Prepared for the Trinity River Restoration Program. Weaverville, CA.

Interior Board of Land Appeals (IBLA), 87-340, July 13, 1989. Opinion by Administrative Judge Irwin.

IBLA, 92-531 and 92-532, October 7, 1997. Opinion by Administrative Judge Burski.

Johnson, W.C. 1994. Woodland expansion in the Platte River, Nebraska: patterns and causes. Ecol. Monographs 64: 45-84.

Jones, A.G., ed. 1981. Trinity County historical sites. Curtis Media, Incorporated. Bedford, Texas.

Krause, A., P.R. Wilcock, and D. Gaeuman, 2010. One hundred and fifty years of sediment manipulation on the Trinity River, CA. Proceedings of the 9th Federal Interagency Sedimentation Conference, June 27 – July 1, 2010, Las Vegas, NV.

Leidy, R.A., and G.R. Leidy. 1984. Life stage periodicities of anadromous salmonids in the Klamath River basin, Northwestern California. Division of Ecological Services, U.S. Fish and Wildlife Service, Sacramento, California.

Lestelle, L.C. 1978. The effects of forest debris removal on a population of resident cutthroat trout in a small headwater stream, University of Washington, Seattle.

Lestelle, L.C., and C.J. Cederholm. 1982. Short-term effects of organic debris removal on resident cutthroat trout. Proceedings: Fish and wildlife relationships in old-growth forests symposium. Ashville, North Carolina.

Limm, M. P., and M. P. Marchetti. 2009. Juvenile chinook salmon (*Oncorhynchus tshawytscha*) growth in off-channel and main-channel habitats on the Sacramento River, CA using otolith increment widths. Environ Biol Fish (2009) 85:141–151.

Lloyd, D.S. 1985. Turbidity in freshwater habitats of Alaska: A review of published and unpublished literature relevant to the use of turbidity as a water quality standard. Alaska Department of Fish and Game. (Report No. 85-1.)

Marine, K., and J. Lyons. 2004. Temperature effects on Trinity River Salmon reproductive physiology. Phase 1: radio telemetry study of migration and behavioral thermoregulation of spring-run chinook salmon in the upper Trinity River. Prepared by North State Resources, Inc. for the Trinity River Restoration Program U.S. Bureau of Reclamation – Mid-Pacific Region. February 2004.

Mayer, K. E., and W. F. Laudenslayer, Jr., eds. 1988. A guide to wildlife habitats of California. California Department of Forestry and Fire Protection. Sacramento, California.

McBain and Trush. 1997. Trinity River maintenance flow study final report.

Medin, A., and R. Allen. 1998. A cultural resources inventory of Weaverville Area Units of the proposed SPI-BLM land exchange. Prepared for Sierra Pacific Industries by KEA Environmental, Incorporated. Confidential report.

Medin, A., and R. Allen. 2007. Mining sites: Historic context and archaeological research design. Prepared by HARD Mining Sites Team for the California Department of Transportation. Draft report on file at the California Department of Transportation.

Michney, F., and M. Hampton. 1984. Sacramento River, Chico Landing to Red Bluff Project: 1984 juvenile salmonid study. U.S. Fish and Wildlife Service, Division of Ecological Services. Prepared for U.S. Army Corps of Engineers.

Michney, F., and R. Deibel. 1986. Sacramento River, Chico Landing to Red Bluff Project: 1985 juvenile salmonid study. U.S. Fish and Wildlife Service, Division of Ecological Services. Prepared for U.S. Army Corps of Engineers.

Miller, S.L., C.G. Ralph, and P.A. Herrera. 2003. Monitoring riparian and aquatic birds along the mainstem of the Trinity River: Trinity River Restoration Program Biannual Report 2003. USDA Forest Service.

Moyle, P.B. 2002. Inland fishes of California. University of California Press. Berkeley, California.

Moyle, P.B., R.M. Yoshiyama, J.E. Williams, and E.D. Wikramanayake. 1995. Fish species of special concern in California. 2nd edition. California Department of Fish and Game, Inland Fisheries Division.

Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neeley, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. (NOAA Technical Memorandum NMFS-NWFSC-35.)

National Marine Fisheries Service (NMFS). 2000. Biological opinion on the Trinity River Mainstem Fishery Restoration Program. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. File Number 151422WR2000AR8271:FR. October 12, 2000.

NMFS. 2001. Guidelines for Salmonid Passage at Stream Crossings.

NMFS. 2006. 2006 Amendment to the 2000 Trinity River Mainstem Fishery Restoration Program Biological Opinion to allow necessary instream construction activities at future streambank rehabilitation projects.

Noggle, C. C. 1978. Behavioral, physiological and lethal effects of suspended sediments on juvenile salmonids. Master's thesis. University of Washington, Seattle.North Coast Regional Water Quality Control Board. 2005. Watershed planning chapter. February 2005.

North Coast Regional Water Quality Control Board. 2007. Water quality control plan for the north coast region.

North Coast Regional Water Quality Control Board. 2011. Water quality control plan for the north coast region. May 2011.

North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation. 2009. Channel rehabilitation and sediment management for remaining Phase 1 and Phase 2 sites. Master Environmental Impact Report, Environmental Assessment/Environmental Impact Report. Trinity River Restoration Program. August 2009. SCH#2008032110.

North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation. 2010. Wheel Gulch Environmental Assessment/Initial Study.

North Coast Unified Air Quality Management District. 1995. North Coast Unified Air Quality Management District particulate matter (PM10) attainment plan.

North Coast Unified Air Quality Management District. 2005. General provisions, permits, and prohibitions: Air quality control rules.

North State Resources. 2005. Indian Creek site delineation of Waters of the United States, including wetlands.

North Wind, Inc. 2011. Trinity River Restoration Program: Phase II Initial Projects Limekiln Gulch, Douglas City, Lower Steiner Flat, Lorenz Gulch, and Upper Junction City Project Rehabilitation Sites. Delineation of Waters of the United States, Including Wetlands. October 2011.

Pelton, M.R. 2000. Black Bear. Pages 389-408 *in* Ecology and Management of Large Mammals in North America. S. Demarais and P.R. Krausman, *eds.* Prentice Hall, Upper Saddle River, New Jersey. 778 p.

Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The Natural Flow Regime: A paradigm for river restoration and conservation. BioScience 47(11): 769-784.

Rytuba, J.J., R.P. Ashley, and B. Gutermuth. 2005. Potential availability of soluble and particulate mercury species from sediment and placer tailings: Expected environmental effects resulting from the Hocker Flat river rehabilitation, Trinity County, California. Preliminary report. U.S. Department of Interior, U.S. Geological Survey.

Sandercock, F.K. 1991. Life history of coho salmon (*Oncorhynchus kisutch*). Edited by C. Groot and L. Margolis, Pacific Salmon Life Histories: UBC Press, Vancouver, Canada.

Sincero, A.P., and G.A. Sincero. 1996. Environmental engineering: A design approach: Prentice-Hall, Inc., as cited in Draft Anderson-Cottonwood Irrigation District Fish Passage Improvement Project

Proposed FONSI/EA/Initial Study (1999).

Smith, J., Trinity County Department of Transportation. 2008. Personal Communication - Telephone conversation with D. Drummond, North State Resources. Re: Mines that are operating per SAMARA permits within Trinity County.

Sommer, T., B. Harrell, M. Nobriga, R. Brown, P. Moyle, W. Kimmerer, and L. Schemel. 2001. California's Yolo Bypass: Evidence that flood control can be compatible with fisheries, wetlands, wildlife, and agriculture. Fisheries 26:6-16.

Sullivan, K., T.S. Lisle, C.A. Dolloff, G.Z. Grant, and L.M. Reid. 1987. Stream Channels: the link between forests and fishes. Pp. 39-97 *In* E.O. Salo and T.W. Cundy (eds.) Streamside Management: forest and fishery interactions. College of Forest Resources. Univ. of Washington Seattle. Contribution No. 57. Proceedings of a Symposium held at Univ. of Washington, February 12-14, 1986.

Trinity County. 1987. Junction City Community Plan. Adopted July 1987.

Trinity County. 2003. Trinity County General Plan.

Trinity River Restoration Program (TRRP). 2009. *Trinity River Riparian Vegetation Map 2008 Update.*

U.S. Army Corps of Engineers (USACE). 1976. Flood plain information, Trinity River: Lewiston Lake to Junction City, Trinity County, California.

U.S. Bureau of Land Management (BLM). 1993. Redding Resource Management Plan and Record of Decision. United States Department of the Interior, BLM, Redding Resource Area, California.

U.S. Bureau of Reclamation and California Department of Water Resources. 2004. Hocker Flat Rehabilitation Site: Trinity River Mile 78 to 79.1 Environmental Assessment/Environmental Impact Report. Trinity River Restoration Program. November 2004. SCH#2004052076.

U.S. Bureau of Reclamation and the North Coast Regional Water Quality Control Board. 2006. Canyon Creek Suite of Rehabilitation Sites: Trinity River Mile 73 to 78 Environmental Assessment/Environmental Impact Report. Trinity River Restoration Program. September 2006. SCH#2005102025.

U.S. Bureau of Reclamation and Trinity County. 2007. Indian Creek Rehabilitation Site: Trinity River Mile 93.7 to 96.5 Environmental Assessment/Environmental Impact Report. Trinity River Restoration Program. April 2007. SCH#2006012101.

U.S. Bureau of Reclamation and the Trinity County Resource Conservation District. 2008. Lewiston Dark Gulch Rehabilitation Project: Trinity River Mile 105.4 to 111.7. Environmental Assessment/Environmental Impact Report. Trinity River Restoration Program. February 2008. SCH#2007042161.

U.S. Census Bureau. 2000. American fact finder. http://factfinder.census.gov/home/saff/main.html?_lang=en (accessed July 3, 2006).

U.S. Census Bureau. 2008. State and county quickfacts. http://quickfacts.census.gov/qfd/states/00000.html (accessed 2008).

U.S. Census Bureau. 2011.

U.S. Department of Agriculture (USDA). 1998. Soil survey of Trinity County, California: Weaverville

Area. http://websoilsurvey.nrcs.usda.gov/app/.

U.S. Department of Interior (USDI). 2000. Record of decision. Trinity River mainstem fishery restoration final environmental impact statement/environmental impact report. December 19, 2000.

USDI. 1995. Memorandum on Klamath Project operation plan (KPOP) regarding certain legal rights and obligations related to the U.S. Bureau of Reclamation, Klamath Project: U.S. Department of the Interior, Office of the Solicitor.

U.S. Fish and Wildlife Service (USFWS). 1980. Environmental impact statement on the management of river flows to mitigate the loss of the anadromous fishery of the Trinity River, California. Volumes I and II. U.S. Fish and Wildlife Service, Division of Ecological Services.

USFWS. 1994. Rehabilitation of the mainstem Trinity River background report. Trinity River Fishery Resource Office. January 1994.

USFWS. 1995. Shasta-Trinity National Forests land and resource management plan. U.S. Forest Service, Pacific Southwest Region. April 1995.

USFWS and USBR. 2011. Upper Junction City – Rehabilitation Project Site Conceptual Design Report. Department of Interior (USDI) Design Group: US Fish and Wildlife Service (USFWS) and Bureau of Reclamation (USBR) June, 2011

U.S. Fish and Wildlife Service (USFWS) and Hoopa Valley Tribe (HVT). 1999. Trinity River Flow Evaluation Final Report. June 1999.

U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 1999. Environmental Impact Statement/Environmental Impact Report for the Trinity River mainstem fishery restoration.

USFWS et al. (U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County). 2000a. Trinity River mainstem fishery restoration Final Environmental Impact Statement/Environmental Impact Report. State Clearinghouse No. 1994123009. October 2000.

USFWS et al. (U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Bureau of Land Management, Hoopa Valley Tribe, California State Historical Preservation Officer, and Advisory Council on Historic Fishery Preservation). 2000b. Programmatic agreement regarding implementation of the Trinity River fishery restoration. November 8, 2000.

U.S. Geological Survey (USGS). 1966. Geology of Northern California, Bulletin 190. Edited by E.H. Bailey. California Division of Mines and Geology. San Francisco, California.

Ward, J.V. 1998. Riverine Landscapes: biodiversity patterns, disturbance regimes, and aquatic conservation. Biological Conservation Vol. 83(3): 269-278.

Williams, G.P. and M.G. Wolman. 1984. Downstream effects of dams on alluvial rivers. U.S. Geological Survey Professional Paper Number 1286.

Wilson, R.A. 1995. Trinity River willow flycatcher surveys, 1990-1992. Final report submitted to Wildlife Task Group, Trinity River Restoration Project, U.S. Department of the Interior, Fish and Wildlife Service, and Bureau of Reclamation.