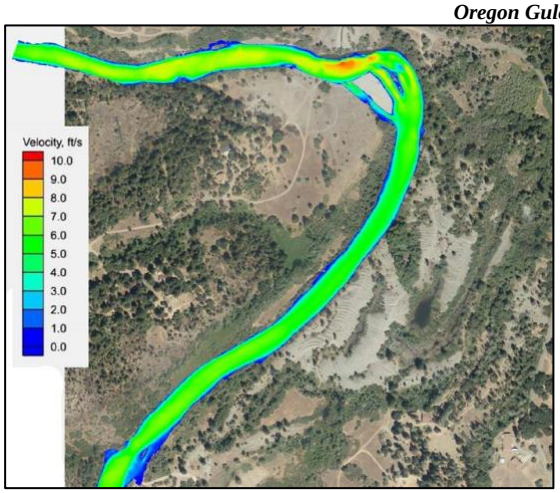
Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9–81.7)

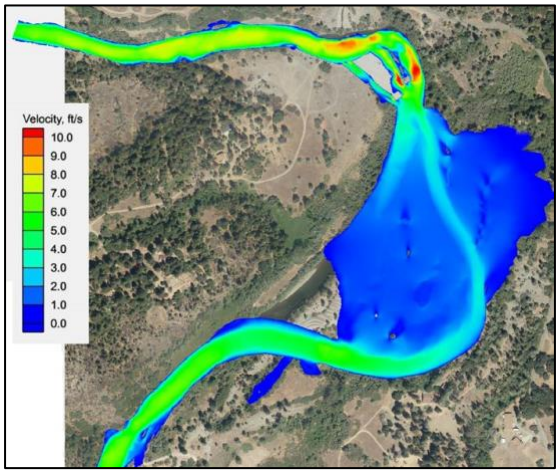
Draft Environmental Assessment/Initial Study

DOI-BLM-CA-N060-2021-0002-EA and CGB-EA-2021-013
State Clearinghouse #TBD
January 2021

Oregon Gulch Current Conditions



Existing Conditions at 3500 cfs



Design Conditions at 3500 cfs

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 the Interior , Bureau of Land Management

Estimated Agency Total Costs Associated with Developing and Producing this Environmental Assessment: $37,000

This page is intentionally left blank.

Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7) Draft Environmental Assessment/Initial Study DOI-BLM-CA-N060-2021-0002-EA CGB -EA-2021-013 California State Clearinghouse #TBD

Project Proponent and Federal Lead Agency for NEPA

U.S. Department of the Interior
Bureau of Reclamation – Trinity River Restoration Program
P.O. Box 1300
1313 Main Street
Weaverville, California 96093

California Lead Agency for CEQA

North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Federal Co-Lead Agency for NEPA

U.S. Department of Interior – Bureau of Land Management
Redding Field Office
6640 Lockheed Drive
Redding, California 96002

Project Proponent's Consultant

Ironwood Consulting, Inc.
370 Alabama Street, Suite A
Redlands, California 92373

This page intentionally left blank

Trinity River Channel Rehabilitation Site:
Oregon Gulch (River Mile 80.9 to 81.7)
Draft Environmental Assessment/Initial Study
DOI-BLM-CA-N060-2021-0002-EA
CGB-EA-2021-013
California State Clearinghouse #TBD

Table of Contents

Page

1 Introduction and Background 1
1.1 Location of Rehabilitation Site 1
1.2 Trinity River Restoration Program Background 2
1.3 Purpose and Need/Project Objectives 2
1.4 Purpose of This Document 3
1.5 Other Regulatory Requirements 6
1.6 Tribal and State Historic Properties Office Consultation 7
1.7 Scoping and Public Involvement to Date 8
1.7.1 Public Scoping 8
1.8 Draft EA/IS 8
2 Description of Alternatives 10
2.1 Alternative 1 10
2.1.2 Detailed Master EIR Activities Described to Provide Additional Clarity Beyond That in Table 2-1 of Master EIR 16
2.1.3 Riverine Construction (R) – Lowered Floodplains 16
2.1.4 Upland (U) – Constructed Landslide Deposit and Upland Spoils 17
2.1.5 In-Channel Construction (IC) – Channel, Sloughs, and Wetlands 18
2.1.6 Contractor Use Areas (C) 18
2.1.7 Access Routes and Temporary Crossings (A) 19
2.1.8 Revegetation 19
2.1.9 Construction Methods and Schedule 21
2.1.10 Environmental Commitments 21
2.2 Alternative 2 22
2.3 Alternatives Considered but Eliminated from Further Evaluation 22

2.3.1 30 Percent Design Alternative 23
2.3.2 60 Percent Design Alternative 23
3 Affected Environment and Environmental Consequences 24
3.1 Introduction to the Analysis 24
3.2 Land Use 26
3.2.1 Affected Environment 26
3.2.2 Environmental Consequences 27
3.3 Recreation 28
3.3.1 Affected Environment 28
3.3.2 Environmental Consequences 28
3.4 Visual Resources/Aesthetics 29
3.4.1 Affected Environment 29
3.4.2 Environmental Consequences 30
3.5 Cultural Resources 31
3.5.1 Affected Environment 32
3.5.2 Environmental Consequences 33
3.6 Transportation and Circulation 33
3.6.1 Affected Environment 33
3.6.2 Environmental Consequences 34
3.7 Air Quality 35
3.7.1 Affected Environment 35
3.7.2 Environmental Consequences 36
3.8 Noise 38
3.8.1 Affected Environment 38
3.8.2 Environmental Consequences 38
3.9 Geomorphology and Soils 39
3.9.1 Affected Environment 39
3.9.2 Environmental Consequences Alternative 1 41
3.10 Hydrology and Flooding 42
3.10.1 Affected Environment 42
3.10.2 Environmental Consequences 43
3.11 Water Quality 44
3.11.1 Affected Environment 44

3.11.2 Environmental Consequences 45
3.12 Fishery Resources....47
3.12.1 Affected Environment 48
3.12.2 Environmental Consequences 48
3.13 Vegetation, Wildlife, and Wetlands 52
3.13.1 Affected Environment 52
3.13.1 Environmental Consequences 58
3.14 Wild and Scenic Rivers 64
3.14.1 Affected Environment 64
3.14.2 Environmental Consequences 65
3.15 CEQA Significance 65
4 Cumulative Impacts and Other CEQA and NEPA Considerations 67
4.1 Cumulative Impacts....67
4.1.1 Methodology and Analysis....67
4.2 Growth-Inducing Impacts....68
4.3 Environmental Commitments and CEQA Mitigation Measures....69
4.4 Significant Impacts under CEQA....69
5 List of Preparers....70
6 References....71

Tables

Table 2-1. Overview of Activity Areas at Oregon Gulch Rehabilitation Site 14
Table 2-2. Environmental Commitments....22
Table 3-1. Resource Topics Considered or Eliminated from Further Consideration in This EA/IS 24
Table 3-2. Soil Map Units in the Oregon Gulch ESL....40
Table 3-3. Estimated Fish Capacity (Total Number of Fish) for the Oregon Gulch Rehabilitation Site at Existing and 90 Percent Design Conditions 50
Table 3-4. Plant Communities and Other Habitats in the Oregon Gulch ESL 53
Table 3-5. Summary of Waters of the United States in the Oregon Gulch ESL 54
Table 3-6. Summary of Impacts to Riparian Habitat in the Oregon Gulch ESL 59
Table 3-7. Summary of Impacts to Wetlands and Waters of the United States in the Oregon Gulch ESL....59

Table 3-8. Summary of Resource Topics Considered in This EA/IS 66

Figures

Figure 1-1. Location of Oregon Gulch Rehabilitation Site, Constructed Rehabilitation Sites, and Future Rehabilitation Sites.....4

Figure 2-1. Proposed Oregon Gulch River Rehabilitation Activities - Alternative 1 (Proposed Action) 12

Figure 3-1. Habitat Types Occurring in the Oregon Gulch ESL 55

Figure 3-2. Potential Waters of the United States in the Oregon Gulch ESL.....56

Figure 3-3. Impacts to Riparian Habitat within the Oregon Gulch ESL 61

Figure 3-4. Impacts to Waters of the U.S. within the Oregon Gulch ESL 62

Appendices

Appendix A Environmental Checklist Form

Appendix B Scoping Summary

Appendix C Comments on Public Draft EA/IS and TRRP Responses (TBD for Final Draft)

Appendix D Project Details

Appendix E Environmental Commitments

Appendix F Mitigation Monitoring and Reporting Program and Project Design Elements

Appendix G Aquatic Conservation Strategy Consistency Evaluation

Appendix H Compliance with Standards and Guidelines for Survey and Manage Species

Appendix I Bureau of Land Management Sensitive Species List

Appendix J Wild and Scenic River Analysis and Determination

Appendix K Summary of Cumulative Impacts

Acronyms and Abbreviations

A	access routes
AB	Assembly Bill
ACS	Aquatic Conservation Strategy
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
C	contractor use areas
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO2	carbon dioxide
CWHR	California Wildlife Habitat Relationships
cy	cubic yard
DWR	California Department of Water Resources
EC	environmental commitment
EA	Environmental Assessment
EA/IS	Environmental Assessment/Initial Study
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
FUP	Free Use Permit
GHG	greenhouse gas
HVT	Hoopa Valley Tribe
IC	in-channel construction feature
IS	Initial Study
ITA	Indian Trust Asset
LRMP	Land and Resource(s) Management Plan
LAM	large amplitude meander
MDB&M	Mount Diablo Base and Meridian
MMRP	Mitigation Monitoring and Reporting Program
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit

ORV	outstandingly remarkable value
PA	Programmatic Agreement
PM	particulate matter
PM10	particulate matter less than 10 microns in aerodynamic diameter
PM2.5	particulate matter less than 2.5 microns in aerodynamic diameter
PRC	California Public Resources Code
R	Riverine (area inundated at approximately 2-year recurrence interval)
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
RM	River Mile
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Officer
STNF	Shasta-Trinity National Forest
SLJ	structured log jams
SMARA	Surface Mining and Reclamation Act
SONCC	Southern Oregon/Northern California Coast
SR	State Route
TMC	Trinity Management Council
TMDL	total maximum daily load
TRD	Trinity River Division
TRRP	Trinity River Restoration Program
U	upland
USACE	U.S. Army Corps of Engineers
USC	United States Code
DOI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VE	value engineering
VQO	visual quality objective
VRM	visual resource management
WP	wood placement
WSE	water surface elevation
WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act
WUA	weighted useable area

1 INTRODUCTION AND BACKGROUND

This Environmental Assessment/Initial Study (EA/IS) for the proposed Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile [RM] 80.9- 81.7) was prepared by the United States Department of the Interior (DOI), Bureau of Reclamation (Reclamation) and DOI Bureau of Land Management (BLM) to meet the requirements of the National Environmental Policy Act (NEPA) and by the North Coast Regional Water Quality Control Board (Regional Water Board) to meet the requirements of the California Environmental Quality Act (CEQA). Reclamation is the lead agency under NEPA, and BLM is a co-lead agency under NEPA for actions specific to BLM-managed lands. The Regional Water Board is the lead agency under CEQA. The federal agencies worked with the Regional Water Board to analyze the potential impacts of the proposed activities under NEPA (40 Code of Federal Regulations [CFR] 1508.9(a)) and CEQA (California Public Resources Code [PRC] 21000 et seq.).

Appendix A (CEQA Environmental Checklist Form) to this EA/IS was prepared to identify the resource topics that were addressed in the *Channel Rehabilitation and Sediment Management Activities for Remaining Phase 1 and Phase 2 Sites, Part 1: Final Master Environmental Impact Report and Part 2: Environmental Assessment/Final Environmental Impact Report,* referred to hereafter as the 2009 Master EIR[1]. Appendix A is also intended to satisfy CEQA requirements.

This EA/IS incorporates by reference and is tiered from two previous joint NEPA/CEQA documents: the *Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Report*, referred to hereafter as the Trinity River EIS/EIR (USFWS et al. 2000), and the Master EIR.[2] The proposed Oregon Gulch rehabilitation site (referred to as the project site or project ESL in this EA/IS) was identified and discussed at a programmatic level in the Master EIR as a Phase 2 site. The purpose of this document (referred to as the project EA/IS) is to provide a site-specific analysis of the proposed rehabilitation activities at the Oregon Gulch site.

BLM would issue a right-of a Right-of-Way (ROW) to Reclamation pursuant to Title V of the Federal Land Policy and Management Act (43 USC 1761 et seq.) to authorize rehabilitation activities and access on BLM-managed lands, as described in this document. BLM would also issue a Free Use Permit (FUP) pursuant to 43 CFR 3604 that would authorize Reclamation to use mineral materials from BLM-managed project lands for restoration activities at the project rehabilitation site. In addition, BLM would authorize site-specific use of vegetation and trees from its managed lands for revegetation purposes, to enhance habitat complexity (wood placement), to provide safe working conditions, and to facilitate access. Reclamation would apply for appropriate permits to remove trees from BLM-managed lands, which would include, but may not be limited to, a FUP pursuant to 43 CFR 5510. Commercially viable trees removed from the site may require a fee permit pursuant to 43 CFR 5400. All environmental commitments, project design features, mitigation measures, and best management practices (BMPs) developed for this EA/IS would be considered for incorporation into the BLM authorization.

1.1 LOCATION OF REHABILITATION SITE

Reclamation proposes to conduct mechanical channel rehabilitation activities on the mainstem Trinity River downstream of Lewiston Dam, as illustrated on Figure 1-1. The project environmental study limit

[1]The Master EIR (DOI-BLM-CA-NO60-2009-0085-EA, Regional Water Board and Reclamation 2009) is available on the TRRP website at <http://www.trrp.net/library/document/?id=476>.

[2]Copies of the Master EIR, the 2000 ROD, and the Trinity River EIS/EIR are available on the TRRP website at <http://www.trrp.net/program-structure/foundational-documents/>.

(ESL or the project site)[3] encompasses approximately 134 acres, which include 96 acres of BLM land and 38 acres of private land. Throughout this document, the terms "river left" and "river right" are used to refer to the banks of the Trinity River when looking downstream. For this project, the left bank is generally the west and south side of the river and the right bank is the east and north side. Another 22 acres in the privately operated Eagle Rock quarry is included as the proposed location to move tailings from the private lands within the Oregon Gulch ESL.

The Oregon Gulch rehabilitation site is located approximately 1.3 miles upstream of the Dutch Creek Road Bridge in Junction City, California. It is in Township 33 North, Range 10 West, Section 16, Mount Diablo Baseline and Meridian (MDB&M) (Figure 1-1). The river elevation at the site is approximately 1,500 feet above mean sea level. Access to the project ESL on river right is via Sky Ranch Road, which intersects State Route (SR) 299 approximately 1 mile north of the project ESL. Project entry to river left does not include vehicle access. Equipment would access river left activity areas from across the river using temporary crossings.

1.2 TRINITY RIVER RESTORATION PROGRAM BACKGROUND

The objective of the Trinity River Restoration Program (TRRP) is to restore historic river processes to the Trinity River through implementation of the 2000 Trinity River EIS/EIR Record of Decision (ROD). TRRP's intent is to restore an ecologically functioning river through rehabilitation activities at multiple locations so that naturally spawning anadromous fish populations may increase to levels that existed prior to construction of Lewiston and Trinity Dams. The TRRP's target reach for restoration is the approximately 40-mile length of river downstream of Lewiston Dam to the confluence of the North Fork Trinity River. In general, the TRRP's approach to channel rehabilitation is to reconnect the river with its floodplain. The TRRP's objectives and background are explained in detail on the TRRP website at <http://www.trrp.net/restoration/channel-rehab/rehabilitation-concepts/#page-part>.

The Master EIR includes a chronology of the management actions relevant to the Trinity River Basin between 1938 and 2008 (Section 1.4.4, pages 1-8). Additional details concerning the legislative and management history can be found in the Trinity River EIS/EIR and the EA/Final EIRs for TRRP projects constructed between 2005 and 2008[4]. The Master EIR (Section 1.4.5, pages 1-10 through 1-15) also contains a summary of the restoration activities undertaken since the signing of the ROD and brief discussions of other watershed restoration programs and activities occurring within the basin. These documents are on file at the TRRP office in Weaverville, California and at the Weaverville public library and are also available on the TRRP website <http://www.trrp.net>.

1.3 PURPOSE AND NEED/PROJECT OBJECTIVES

The TRRP is tasked with increasing habitat and river function for all life stages of naturally produced anadromous fish native to the Trinity River in the magnitude necessary to reach congressionally mandated population levels. The TRRP's strategy is to increase habitat diversity, quality, and quantity for juvenile native fish rearing while also ensuring that habitat complexity and quantity increase as the alluvial processes of the Trinity River are enhanced or restored. The purpose of the rehabilitation is to engineer functioning hydrological and ecological conditions to perpetually maintain fish and wildlife resources (including threatened and endangered species) and the river ecosystem. The proposed rehabilitation activities at the Oregon Gulch site are needed to support the TRRP's goals of restoring fish populations to

[3]The Environmental Study Limit, or ESL, is the anticipated maximum geographic limit of project activities (the site boundary). The ESL includes a buffer applied for the purposes of resource identification and associated impact analyses and is the area where pre-project resource surveys are concentrated.

[4] Hocker Flat (Reclamation and DWR 2004), the Canyon Creek Suite (Reclamation and the Regional Water Board 2006), Indian Creek (Reclamation and Trinity County Resource Conservation District (TCRCD) 2007), and Lewiston-Dark Gulch (Reclamation and TCRCD 2008).

pre-dam levels and restoring dependent fisheries, including those held in trust by the federal government for the Hoopa Valley and Yurok tribes.

The purpose of the project is to advance one of the primary TRRP objectives, which is to mechanically reshape and scale the current channel form to interact with the flow regime so that physical processes would be reestablished to create and maintain fish habitat. The proposed design consists primarily of removing tailings piles, creating a new river channel, and excavating high-elevation river bank areas to create one large, frequently inundated floodplain.

1.4 PURPOSE OF THIS DOCUMENT

Both NEPA (42 USC 4321 et seq.) and CEQA (California PRC 21000 et seq.) require that governmental agencies disclose information about proposed activities that may affect the environment; evaluate the potential environmental impacts of their proposed actions before making formal commitments to implement them; and involve the public in the environmental review process. This document, a site-specific EA/IS for the Proposed Action at the Oregon Gulch site, has been prepared to comply with NEPA and CEQA. This EA/IS evaluates the environmental impacts of the Proposed Action, recommends project design features and mitigation measures to minimize impacts, and is designed to facilitate implementation of the project under all applicable laws.

For Reclamation, this document is tiered to the previous analysis in the *Trinity River Mainstem Fishery Restoration Final EIS/EIR* (FEIS/EIR; USFWS et al. 2000a) prepared by the U.S. Fish and Wildlife Service (USFWS), Reclamation, and the Hoopa Valley Tribe (HVT) in 2000, herein referred to as the 2000 FEIS/EIR.

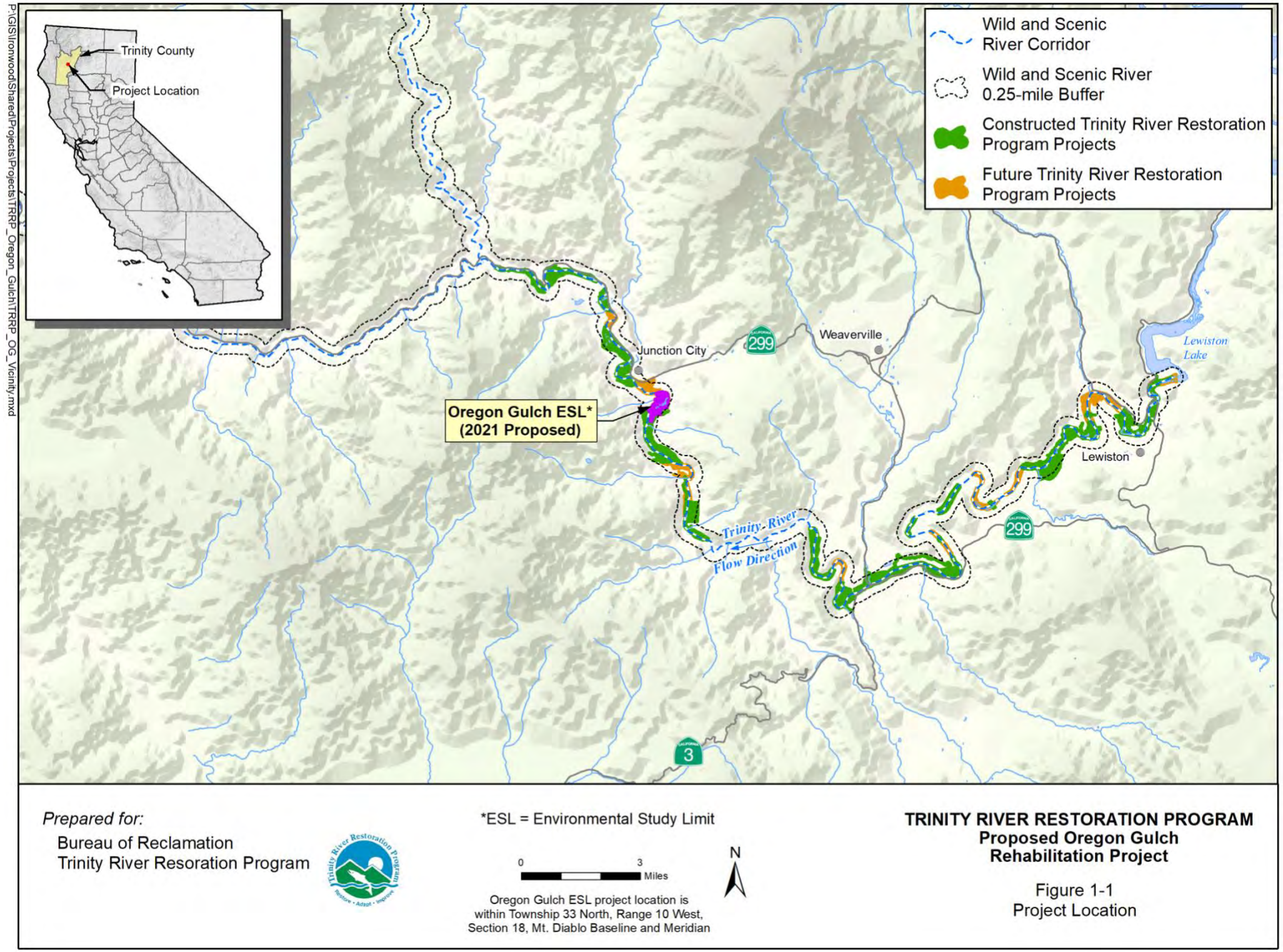
BLM did not participate in the preparation of the 2000 FEIS/EIR; the analysis in that document is, therefore, incorporated into this EA/IS to cover BLM participation in the Proposed Action. The NEPA analysis in this EA/IS incorporates by reference the analyses in the 2009 Master EIR/EA/EIR (Regional Water Board and Reclamation 2009).

In 1994, the USFWS as the NEPA lead agency and Trinity County as the CEQA lead agency began the public process for developing an EIS/EIR for the Trinity River Mainstem Fishery Restoration Program. The FEIS portion of the FEIS/EIR, published in October 2000, functions as a project-level NEPA document supporting policy decisions associated with managing Trinity River flows and as a programmatic NEPA document providing "first-tier" review of other potential actions, including the Proposed Action[5]. However, because the Trinity County Board of Supervisors—the CEQA lead agency for the FEIS/EIR—did not certify the EIR portion of the 2000 FEIS/EIR, the EIR portion was not available to the TRRP and its partner agencies as a CEQA document adequate for tiering. Between 2004 and 2008, four joint EA/EIRs were completed to analyze TRRP channel rehabilitation projects. Based on the similarity of these projects and their environmental impacts and agreement that future TRRP projects would have similar impacts, a separate programmatic document, the 2009 Master EIR, was developed with the Regional Water Board as the CEQA lead agency. The EA portion of the 2009 Master EIR-EA/EIR tiers from the Trinity River Mainstem Fishery Restoration FEIS/EIR (USFWS et al. 2000). The ROD, dated December 19, 2000, for the FEIS/EIR directed DOI agencies to implement the Flow Evaluation Alternative, which was identified as the Preferred Alternative in the FEIS/EIR.

A Master EIR forms the basis for analyzing the effects of subsequent projects (CEQA Guidelines 15175 et seq.). The Master EIR meets the elements required for a Program EIR pursuant to California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15168. Therefore, the Master EIR provides programmatic CEQA level review from which the Oregon Gulch project—a subsequent site-specific project—is tiered.

[5] The Proposed Action is Alternative 1, as described in Chapter 2 of this EA/IS.

Figure 1-1. Location of Oregon Gulch Rehabilitation Site, Constructed Rehabilitation Sites, and Future Rehabilitation Sites



This page is intentionally left blank.

The Regional Water Board acted as the lead agency for the Master EIR (California State Clearinghouse #2008032110) and for the IS portions of subsequent site-specific EA/ISs. The Master EIR provides a discussion of the existing conditions, environmental impacts, and mitigation measures required to comply with CEQA (California PRC 21000 et seq.). In addition to addressing direct and indirect impacts associated with proposed projects and alternatives, the Master EIR addresses cumulative and growth-inducing impacts that could be associated with activities at the remaining Phase 1 and Phase 2 sites. The Regional Water Board certified the Master EIR on August 25, 2009.

Because the Master EIR provides programmatic-level review from which site-specific projects may tier, the analysis of the Proposed Action required under CEQA is tiered from that document. In addition, the EIS portion of the 2000 FEIS/EIR functions as a project-level NEPA document used by the Secretary of Interior to support the development of a ROD. The ROD established provisions for managing Trinity River flows. The ROD is a programmatic NEPA document that provides "first-tier" review of other potential actions, including the Proposed Action.

Under 14 CCR 15177, after a Master EIR has been prepared and certified, subsequent projects that the lead agency determines as being within the scope of the Master EIR will be subject to only limited CEQA environmental review[6]. California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15177, subd. (b)(2)) states that the preparation of a new environmental document and new written findings will not be required if, based on a review of the IS prepared for the subsequent project, the lead agency determines, on the basis of written findings, that no additional significant environmental effects will result from the proposal, that no new additional mitigation measures or alternatives are required, and that the project is within the scope of the Master EIR. Whether a subsequent project is within the scope of the Master EIR is a question of fact to be determined by the lead agency based on a review of the IS to determine whether there are additional significant effects or new additional mitigation measures or alternatives required for the subsequent project that are not already discussed in the Master EIR.

This EA/IS provides site-specific details for the analysis of the environmental impacts of the Oregon Gulch channel rehabilitation project and has been prepared to comply with NEPA (42 USC 4321 et seq.) and CEQA (California PRC 21000 et seq.). This EA/IS focuses on the potential effects of activities specific to the Oregon Gulch rehabilitation project and serves as a joint NEPA/CEQA document developed to support agency decision-making and satisfy both NEPA and CEQA requirements for public involvement and disclosure. This EA/IS contains a site-specific project description and other information required to apply for enrollment under General Water Quality Certification R1-2020-0025 (North Coast Regional Water Quality Control Board 2020) or subsequent reissued certification for Trinity River channel rehabilitation activities. The Regional Water Board will consider this information in making its determination and decision regarding water quality certification.

1.5 OTHER REGULATORY REQUIREMENTS

In addition to CEQA and NEPA, the proposed rehabilitation activities at the Oregon Gulch site are subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities, such as the Clean Water Act, Endangered Species Act (ESA), California Endangered Species Act (CESA), California Fish and Game Code, National Historic Preservation Act[7] (NHPA), Wild and Scenic Rivers Act (WSRA), and BLM's 1993 Redding Resource Management Plan (RMP) and ROD (BLM 1993).

---

[6] Federal agencies do not have the ability to conduct a limited NEPA review; the Master EIR was not a NEPA document.

[7] Section 3.1.1 of the Master EIR provides a comprehensive discussion of Reclamation's approach to compliance with the National Historic Preservation Act, specifically with respect to Section 106 consultation requirements. Appendix D of the Master EIR documents the programmatic agreement for cultural resources between USFWS,

The primary responsible and trustee agencies for the Oregon Gulch project are the U.S. Army Corps of Engineers (USACE), USFWS, National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), the Regional Water Board, and Trinity County. Chapter 3, Regulatory Framework, of the Master EIR includes descriptions of the actions required of these agencies and the applicable environmental statutes and identifies permits required for the TRRP's work on the Trinity River.

BLM's Redding Field Office manages federal lands in the Trinity River Basin in accordance with its 1993 Redding RMP and ROD (BLM 1993). The RMP discusses the general condition of natural and cultural resources in the plan area and prescribes appropriate land use management for BLM lands. BLM lands in the project ESL are allocated as "Other" in the RMP; however, the RMP was amended by the Northwest Forest Plan (Forest Service 1995) in 1995 to include new land allocations (e.g., Riparian Reserves) and established requirements for compliance with the Aquatic Conservation Strategy (ACS) and other Standards and Guidelines to protect habitat for the northern spotted owl (*Strix occidentalis caurina*). A key component of the amendment to the RMP was establishment of Riparian Reserves along rivers and streams to protect aquatic resources. Virtually all of the project ESL on BLM lands is considered Riparian Reserves and is subject to the ACS; private lands are not included in this land allocation. The Trinity River from Lewiston Dam to Weitchpec is federally designated as a Wild and Scenic River (WSR; recreational designation) for its fisheries and recreational values. BLM is the federal river manager from Lewiston Dam to the North Fork Trinity River. The ACS for the project is provided in Appendix G.

The Trinity Management Area section of the RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan's jurisdiction, including BLM-managed public lands in the Oregon Gulch ESL. Section 4.2.2 of the Master EIR provides additional information about the RMP. As part of its decision-making process, BLM must evaluate the consistency of the Proposed Action with the RMP, as amended.

The State Surface Mining and Reclamation Act (SMARA) and County regulations would provide guidance for removal of waste mining materials from the Oregon Gulch site to the Eagle Rock quarry, located 3.7 miles northwest of the project ESL, where excavated material could be processed, relocated, or disposed of. Trinity County, under its SMARA conditional use permit with Eagle Rock, Inc., is collaborating with project proponents to authorize transfer of up to 500,000 cubic yards from the Oregon Gulch site to the Eagle Rock quarry. Trinity County is responsible for annual inspections at the Eagle Rock quarry and would define where transferred materials would be placed. The proposed expanded capacity at the Eagle Rock quarry may also require an increase in its reclamation bond requirements.

1.6 TRIBAL AND STATE HISTORIC PROPERTIES OFFICE CONSULTATION

Federal agencies are required to consider the effects of their actions on historic properties (i.e., cultural resources that rise to a certain level of significance) in compliance with Title 54 USC Section 306108, commonly referred to as Section 106 of the NHPA. The Section 106 process is often used to satisfy the requirements for cultural resources under NEPA. The Section 106 process includes identification, consultations, and, if needed, mitigation measures for effects determined adverse and unavoidable.

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Cultural resources that meet criteria for listing on the California Register of Historical Resources (CRHR) (defined at 14 CCR Section 15064.5[a]) are called "historical resources," and cultural resources that meet the criteria for listing on the National Register of Historic Places (NRHP) (defined at 36 CFR Section 60.4) are called "historic properties." While the CRHR and NRHP significance criteria are similar, the NRHP is given precedence in this analysis because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but the reverse is not necessarily true (California PRC

Reclamation, BLM, the Hoopa Valley Tribe, the California State Historic Preservation Office, and the Advisory Council on Historic Preservation.

Section 5024.1[c]). Therefore, employing the federal standards will fulfill both federal and state requirements for cultural resources.

Additional state regulations regarding tribal consultation include Assembly Bill 52 (AB 52), which was signed by the Governor of California in September 2014. The bill requires that California state lead agencies consult with California Native American tribes traditionally and culturally affiliated with the geographic area of a project when the tribe requests to be informed of such projects and requests the consultation to ensure that impacts to tribal cultural resources are minimized. AB 52 requirements apply to projects with a Notice of Preparation or a Notice of Negative Declaration or Mitigated Negative Declaration filed on or after July 1, 2015. Although the Master EIR predates and therefore does not incorporate the consultation requirements of AB 52, it is applicable to projects completed after July 1, 2015. The Mitigation Monitoring and Reporting Program (MMRP; Appendix F) adopted by the Regional Water Board as part of the Master EIR includes measures for the protection of tribal cultural resources, including tribal consultation and coordination; site evaluations; and avoidance, minimization, and other specific mitigation as necessary at the site scale.

1.7 SCOPING AND PUBLIC INVOLVEMENT TO DATE

Since the signing of the 2000 ROD and efforts to begin its implementation, TRRP and other agencies have held numerous public meetings and open houses to obtain public input and provide the public with information on the overall TRRP rehabilitation activities. As part of ongoing TRRP outreach activities, TRRP staff members have met with local groups (e.g., fishing guides and mining groups) and individual landowners from the Junction City area to obtain stakeholder input and advice and to address general concerns not specific to the Oregon Gulch rehabilitation activities. Notice of all public meetings and other pertinent project information are announced in local newspapers and posted on the TRRP's website at <http://www.trrp.net>. Included below is a summary of the scoping and public involvement for the Oregon Gulch site to date.

1.7.1 Public Scoping

Public scoping for the Oregon Gulch Project was initiated on October 22, 2020, and ended on November 23, 2020. At the onset of the public scoping period, notices informing the public of the intent to begin the environmental review process were posted on the TRRP and Reclamation websites and at the TRRP Weaverville office and BLM Redding Field Office. Hardcopy scoping notices were also mailed and emailed to local landowners and interest groups. A copy of the scoping notice is included in Appendix B. The TRRP hosted a virtual scoping meeting on November 5, 2020, to outline the Proposed Action and receive public input.

During public scoping for this project, two comments were received from the public, and 16 questions were asked by members of the public during the scoping meeting. The local Nor-Rel-Muk Wintu tribal chair noted that that the Oregon Gulch area was historically used by the ancestors of their native people and that a cultural resource monitor, approved by the Nor-Rel-Muk Wintu nation, should be present during implementation. One comment, regarding the impacts of traffic from hauling of materials between the project ESL and an off-site quarry, was also received. The scoping notice, scoping meeting agenda, and questions and responses are included in Appendix B.

1.8 DRAFT EA/IS

Reclamation and BLM are providing reasonable time for public review of the Draft EA/IS, starting when the agencies post the document to their official websites. For the Oregon Gulch project, approximately 30 days will be allocated for the review period, which will be between January 15 and February 16, 2021. During this time, the Draft EA/IS will be circulated to local, state, and federal agencies and to interested organizations and individuals so that the lead agencies might receive meaningful input on their environmental analyses.

The formal CEQA 30-day public review period begins when the document is received by the California State Clearinghouse (anticipated to be January 15, 2021).

Copies of the EA/IS are available for review at:

- TRRP website at https://www.trrp.net/restoration/channel-rehab/sites/oregon-gulch-channel-rehabilitation-page/, and
- BLM's National NEPA Register at https://eplanning.blm.gov/eplanning-ui/project/2003290/510

Please send comments to Brandt Gutermuth via email at fgutermuth@usbr.gov or mail to:

Oregon Gulch Scoping
C/O TRRP
P.O. Box 1300
Weaverville, CA 96093.

2 DESCRIPTION OF ALTERNATIVES

This chapter describes Alternative 1 (Proposed Action) and Alternative 2 (No Action) for the Oregon Gulch project as well as two alternatives that were eliminated from detailed analysis in this EA/IS.

2.1 ALTERNATIVE 1

The Oregon Gulch project reach begins approximately 1.3 miles upstream of the Dutch Creek Road Bridge in Junction City. The project site is currently characterized by a straight, simple channel entrenched between tailings piles with heights of up to 40 feet above the riverbed. Mining debris deposition into the river corridor during the period of upslope hydraulic mining and subsequent dredging coupled with fluvial incision resulted in a section of river with extremely poor rearing, spawning, and adult holding habitat and a pronounced dip in rearing habitat capacity at flows between 450 cubic feet per second (cfs) and 8,000 cfs. The proposed design primarily involves the removal of tailings piles to create one large, frequently inundated floodplain. The general project objectives of this design are to increase rearing habitat across all flows, eliminate the rearing habitat dip below bankfull flows, increase the functional floodplain area, and increase topographic and hydraulic complexity throughout the site. Habitat for threatened salmonids, steelhead, and other aquatic and riparian species is currently impaired throughout this reach by the legacy of dredger mining and water diversions that have altered natural variable flows.

Alternative 1 was developed to strike a balance between active (e.g., construction) and passive (e.g., flow regime changes) methods. The design of the Proposed Action incorporates elements of the stage-zero restoration concept described by Cluer and Thorne (2014) with the more familiar concept of a braided channel system consisting of several stable channels separated by vegetated islands (Knighton 1998). The stage-zero concept hypothesizes that a network of small channels that inundate the adjacent floodplain and wetlands at relatively low and frequent discharges (about 600 cfs at Oregon Gulch) provides greater ecological benefits than a single large stream channel.

The stage-zero concept has been implemented for various projects in the Pacific Northwest by creating a geomorphic grade surface that spans the valley width and has a longitudinal slope defined by the elevation of hydraulic controls at the upstream and downstream ends of the project reach (Powers et al. 2019). This approach is well suited to low slope areas where valley and floodplain connectivity can be restored to promote longitudinal and lateral sediment deposition. The ESL is well suited to this approach due to its low slope, wide valley (accessible with tailings removal), and stable geomorphic control near the Oregon Gulch Creek confluence with the Trinity River. However, the necessity of maintaining boat passage precludes implementation of a true stage-zero design, so the final design for the project incorporates elements of a large amplitude meander (LAM) rehabilitation design focused on increasing sinuosity through the reach by extending the length of the main channel. LAM rehabilitation designs include the creation of side channels and high-flow channels through existing tailings ponds as well as extensive lowering of the tailings to encourage riparian growth.

The project design is intended to maximize rehabilitation objectives at this severely disturbed site in order to improve rearing habitat, which would enhance the growth and survival of fry produced at the Sheridan Riffle immediately upstream; the Sheridan Riffle has been the most productive natural salmon spawning area on the Trinity River. The overall objective of the project is to restore a dynamic floodplain and habitat while, on a smaller scale, facilitate the dynamic fluvial geomorphic processes that existed before Lewiston Dam was completed. Detailed project objectives are as follows.

Physical Objectives

- Remove tailings piles that constrict surface water movement from a riverine valley bottom spanning 16.7 acres.

- Increase the extent and frequency of floodplain inundation.
- Promote fluvial processes, such as bedform dynamics and channel planform change.
- Reduce deficit of in-river wood through wood placement, structured log jams, and planted riparian vegetation. This would help future recruitment of native vegetation and deposition of woody debris.

Biological Objectives

- Ensure that habitat availability continuously increases as discharge increases above baseflow.
- At a minimum, increase rearing habitat by twofold across the range of frequent discharges during the period when juvenile salmon are present in the river (350–4,000 cfs).
- Increase recruitment and downstream capture of allochthonous spawning gravel within the aquatic ecosystem.
- Enhance existing native amphibian habitat.
- Create seasonal surface water connection to off-channel habitats.

Riparian Objectives

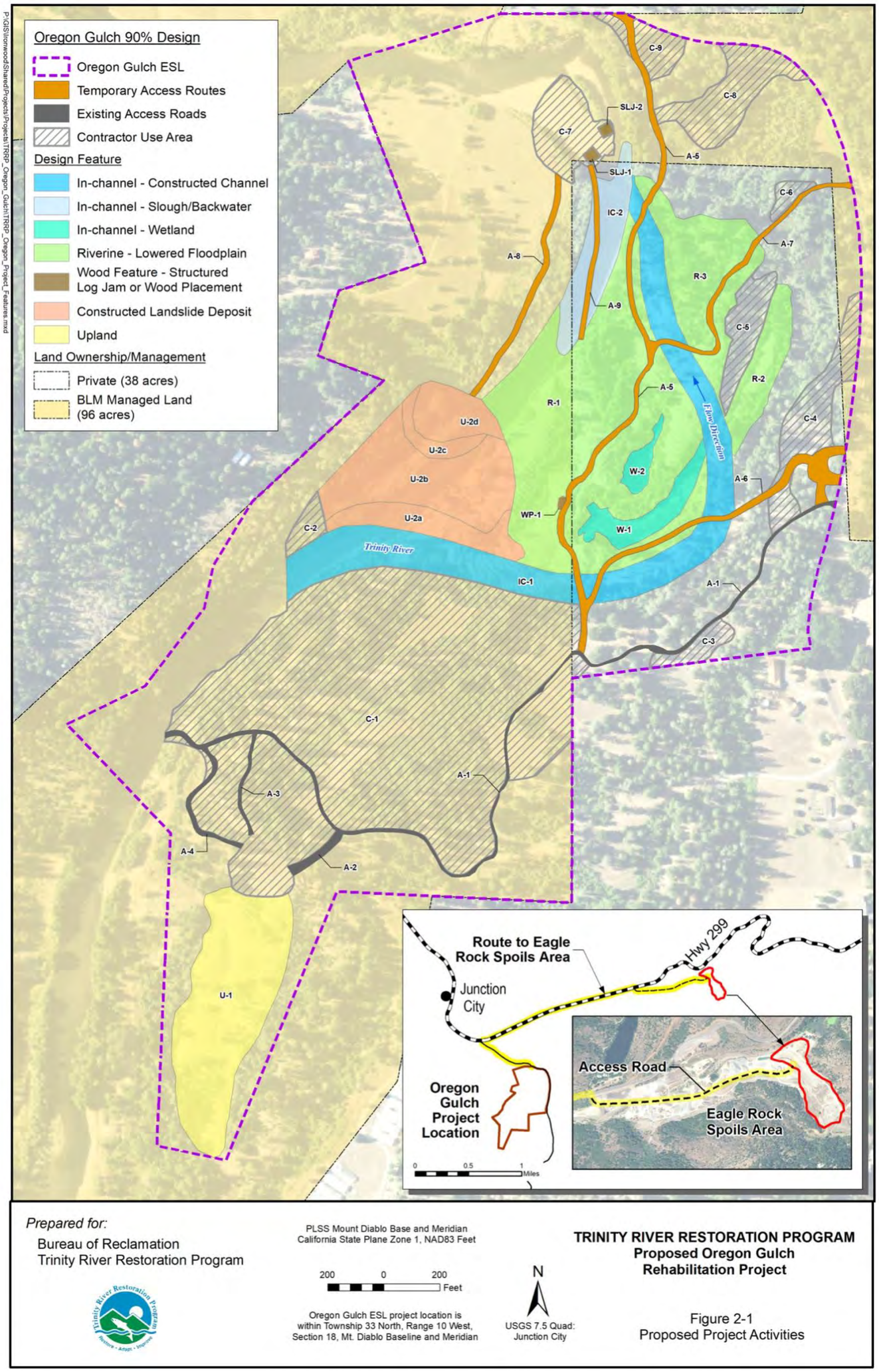
- Minimize impacts to existing multi-story riparian vegetation, such as cottonwood, alder, and willow.
- Increase riparian vegetation biomass and abundance in the tree, shrub, and herb layer along design features compared to existing conditions.
- Increase the number of riparian trees, particularly cottonwood that could supply logs in excess of 24 inches in diameter to the river.
- Increase native species richness, abundance, and diversity.

This alternative consists of a number of rehabilitation activities based on those described and analyzed in Section 2.3.2 of the Master EIR (Regional Water Board and Reclamation 2009). This alternative also includes the transportation of up to 500,000 cubic yards of tailings and/or excavated material for off-site disposal.

Construction of Alternative 1 would require removal of approximately 334,590 cubic yards of tailings and floodplain material and excavation of another 181,900 cubic yards for a total of 516, 490 cubic yards. Approximately 195,860 cubic yards of the excavated materials would be used as fill to construct project features, including 52,860 cubic yards for the construction of design features (e.g., constructed landslide, temporary river crossings), and 143,000 cubic yards for construction of an upland area (see Table 2-1). The remaining 320,630 cubic yards of excavated material would be transported off site to the Eagle Rock quarry for disposal. Provided that funding is available, the 143,000 cubic yards of material that could be placed in the upland area may also be transported offsite to preserve floodplain width. Between 320,630 and approximately 500,000 cubic yards of tailings and excavated material could be relocated to the Eagle Rock quarry (see Figure 2-1). Only material from private lands will be moved off site to the Eagle Rock quarry.

The proposed rehabilitation activities are briefly described below; Appendix D provides a more in-depth description of the design objectives and discusses each activity area in detail. With the exception of re-contouring and vegetation removal, each activity type and area has been assigned a unique alphabetic and numeric identification label that corresponds to the type and location of activity areas illustrated on Figure 2-1 and described in Table 2-1. These labels are used throughout this document.

Figure 2-1. Proposed Oregon Gulch River Rehabilitation Activities - Alternative 1 (Proposed Action)



This page intentionally left blank.

Table 2-1. Overview of Activity Areas at Oregon Gulch Rehabilitation Site

Activity Area [a]	Map Symbol	Design Feature to Be Constructed	Activity/ Treatment Area [b] (acre)	Excavation cy [c]	Fill cy [c]
IC-1		In-Channel – Constructed Channel	7.1	181,900	--
IC-2		In-Channel – Slough	1.9	--	5,050
		IC Subtotal =	**9.0**	**181,900**	**5,050**
R-1		Lowered floodplain [d]	11.9	233,070	6,210
R-2		Lowered floodplain[d]	1.4	32,640	--
R-3		Lowered floodplain[d]	3.4	68,880	--
		R Subtotal =	**16.7**	**334,590**	**6,210**
WP-1		Wood placement	<0.1	--	150
SLJ-1		Structured log jam (220 ft, 38 horizontal logs)	<0.1	--	275
SLJ-2		Structured log jam (670 ft, 112 horizontal logs)	<0.1	--	275
		Wood Features Subtotal [g] =	**0.1**	**0**	**700**
W-1		Wetland/Pond	1.0	--	--
W-2		Wetland/Pond	0.4	--	--
			1.4	0	0
U-1		Upland – Spoils area	5.6	--	143,000
U-2		Upland – Constructed Landslide Deposit	6.7	--	40,900
		U Subtotal =	**12.3**	**0**	**183,900**
A-1		Existing access (3,558 ft)	0.9	--	--
A-2		Existing access (226 ft)	0.2	--	--
A-3		Existing access (383 ft)	0.1	--	--
A-4		Existing access (383 ft)	0.2	--	--
A-5		Temporary access [d, e] (2,478 ft)	1.2	--	--
A-6		Temporary access [d, e] (1,399 ft)	0.8	--	--
A-7		Temporary access [d, e] (1,130 ft)	0.4	--	--
A-8		Temporary access [d, e] (1,294 ft)	0.4	--	--

Activity Area [a]	Map Symbol	Design Feature to Be Constructed	Activity/ Treatment Area [b] (acre)	Excavation cy [c]	Fill cy [c]
A-9		Temporary access [d, e] (632 ft)	0.3		
		A Subtotal =	**4.7**	--	--
C-1		Contractor use area	26.7	--	--
C-2		Contractor use area	0.4	--	--
C-3		Contractor use area	0.5	--	--
C-4		Contractor use area	1.9	--	--
C-5		Contractor use area	1.0	--	--
C-6		Contractor use area	0.3	--	--
C-7		Contractor use area	1.5	--	--
C-8		Contractor use area	1.8	--	--
C-9		Contractor use area	0.8	--	--
		C Subtotal [d] =	**34.9**		
		Total =	**78.9**	**516,490**	**195,860**

[a] IC = in-channel work area; R = riverine work area; U = upland fill area (fill); C = construction staging/contractor use areas; A = access roads; SLJ = structured log jam.
[b] Area calculated from geographical information system (GIS) data.
[c] Provided by TRRP; cy = cubic yard.
[d] Revegetation after construction.
[e] Access roads would also be used to transport woody materials (logs and/or slash) to activity areas on river left and right.

Under the re-contouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding of juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities with the exception of crossings. Where re-contouring is part of the Proposed Action (e.g., floodplain lowering), the entire area would be subject to vegetation removal, but, where possible, riparian vegetation (e.g., willows) would be salvaged and stored in the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat. In addition to the activity areas that would be cleared prior to grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As shown on Figure 2-1, upland and contractor use areas include discrete locations where removal of vegetation is anticipated based on coordination with and authorization by BLM and landowners.

Vegetation removed from activity areas, including contractor use areas, would be used for in-river placement. Large wood would be chipped or masticated for use as organic material to increase nutrients and enhance water holding for revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and,

potentially, scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

2.1.2 Detailed Master EIR Activities Described to Provide Additional Clarity Beyond That in Table 2-1 of Master EIR

Wood Features – Structured Log Jams and Wood Placement

Impacts associated with the use of organic (e.g., large wood, slash) and inorganic (e.g., boulders) materials were covered in the Master EIR under Sediment Management activities along with other activities that would facilitate channel construction and maintenance (e.g., excavation and placement of alluvial material in in-channel and riverine areas). Large wood was discussed as a sediment management activity and is further described here, including structured log jams (SLJs) and wood placement (WP).

Woody material is a natural component of healthy rivers. It provides important habitat for aquatic species by providing cover during high flows and from predators. The low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. Woody material can also help create and maintain beneficial habitat features such as pools, islands, and gravel bars.

SLJs are key engineered features in TRRP projects that are constructed of trees, slash, earth, and rock (as ballast). WP is less permanent and may consist of individual pieces, small accumulations, and large habitat structures. Both would be installed to mimic natural wood features that formed under historic conditions. Project features incorporating large wood pieces were designed to create habitat and prevent the recapture of the existing mainstem, while simultaneously allowing the design channel morphology to evolve naturally over time. A combination of SLJ and WP features would be used to strengthen highly erosive points in select activity areas until vegetation becomes established. In addition to erosion control, these features would be integrated into the design of R and IC activity areas to provide habitat cover and structure and would slow high-flow velocities to improve aquatic habitat over a range of flows.

A combination of whole trees harvested onsite and root wad logs from both onsite and offsite staging areas would be used. SLJ-1 and SLJ-2 are two wood features planned for construction on the Oregon Gulch delta at the downstream end of the project site. These structures are intended to increase topographic and hydraulic diversity and to promote roughness and vegetation establishment. The location of these structures was chosen to encourage temporary and long-term wood recruitment for wood storage in the system. The WP-1 large wood structure would make use of an unusually large cottonwood tree that currently exists at the project site and must be removed to accommodate necessary excavation. Excess slash would be scattered along both banks of the IC-1 channel and in the wetlands for in-water cover.

Wood and slash would also be heavily used on the floodplain to provide roughness and high-quality cover for fish. Large wood would be incorporated in the upstream portion of U-2 to provide roughness, habitat, and structural stability along the newly constructed bank. As appropriate, large wood and accompanying slash removed as part of vegetation-clearing activities would be retained and used for construction of SLJ and WP structures during riverine and in-channel activities to provide additional hydraulic and habitat complexity and as temporary erosion-control measures; these activities would potentially occur in any of the IC or R features. A large wood structure at WP-1 would bifurcate overbank flow streamlines, creating hydraulic variability and local scour and deposition. Interactions between WP-1 and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could take the form of a vegetated island between two channel anabranches.

2.1.3 Riverine Construction (R) – Lowered Floodplains

Three lowered floodplains (R-1, R-2, and R-3) would be constructed to be inundated and function at flows ranging from about 600 cfs to more than 7,000 cfs. These activities are intended to expand the surface area of the channel that could be inundated by reoccurring flows below the ordinary high-water

mark (6,000 cfs). The three floodplains are separate sections of a single implementation of the valley grade concept that underpins stage-zero restoration design.

Together, R-1, R-2, and R-3 represent 16.7 acres of new floodplain that would provide abundant high-quality juvenile rearing habitat at discharge levels that are frequently exceeded during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 334,590 cubic yards of material. The vast majority of processed alluvial material would be sourced from, and processed within, the project ESL or the Eagle Rock quarry. Some material from other areas within the Trinity River watershed may also be used as needed. Unprocessed dirt and gravel, referred to as "pit-run," from on-site excavation could be used in the construction of upland, riverine, and in-channel features and for habitat enhancement. Rock processing would be continuously monitored for compliance with turbidity standards when equipment is working in or near the river. If necessary, a portion of the R areas would be used in addition to the C-1 area to process and sort river rock into needed sizes for use in project construction.

Due to their low elevation and large width, the R-1, R-2, and R-3 floodplains are expected to be depositional in some areas and experience scour in other areas. In a stage-zero river restoration design, such as for the Proposed Action, natural deposition and scour work in concert to restore a river's equilibrium and help to create complex channels with high habitat value for native species. Deposition is expected to be the dominant geomorphic process in the upstream third of R-1, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-2 and R-3, whereas scour is unlikely in those areas due to their positions along the right valley margins. The low elevation of the valley grade surface would also encourage rapid colonization of riparian vegetation, which would increase both trophic production and the quality of rearing habitat quality in the area.

The valley grade surface spans the full longitudinal extent of the project site. The existing surfaces in the valley grade area contain tailings piles as well as some depressions at elevations near or below the valley grade surface. These depressions, which include one deep open-water pond, would be retained in the final floodplain surfaces. The final surfaces would incorporate woody debris, transplanted willow clumps, and preserved patches of desirable existing vegetation to increase hydraulic roughness. In conjunction with the design of the main river channel (IC-1, described below), these three floodplains are designed to inundate at discharges near 600 cfs.

2.1.4 Upland (U) – Constructed Landslide Deposit and Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in an upland area (U-1) as fill on terraces formerly subjected to a variety of placer mining activities and in a constructed landslide deposit area (U-2) that would divert the river from its existing channel into the new IC-1 alignment along the right margin of the valley, as described above. The U-2 area would cover 6.7 acres, requiring a net fill of about 40,900 cubic yards. U-1 would accommodate approximately 143,000 cubic yards of excavated material on 5.6 acres. Upland activity areas have been located to ensure that there would be no increase in the elevation of the 100-year floodplain, consistent with requirements of Trinity County's Floodplain Ordinance.

The primary purpose of the U-2 constructed landslide is to divert the Trinity River from its existing channel into a new alignment (IC-1, described below) along the right margin of the valley. The U-2 feature consists of a large mound of well-graded alluvium that rises gradually from river level at the upstream edge of the R-1 floodplain. The bulk of the material used to construct U-2 would be the raw alluvial material obtained from excavation at the Oregon Gulch site. Some portions of U-2, however, are expected to experience relatively high shear stresses during floods and so would incorporate varying amounts of additional cobble using small boulder materials and large wood.

2.1.5 In-Channel Construction (IC) – Channel, Sloughs, and Wetlands

In-channel construction includes activities that would occur in the river under base flow conditions (e.g., 450 cfs) during the in-channel construction window (July 15 to October 15). After September 15, BMPs would be in place to minimize impacts to adult coho and Chinook salmon. During construction of in-channel activity areas, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed by the end of construction if the water within these contained areas is of appropriate quality for discharge to the river or they may be left in place for removal by subsequent high flows. Alternatively, water in the constructed features may be pumped to uplands or slowly metered into the mainstem river in order to reduce the amount of turbid water that would reach the Trinity River to ensure that water quality permit requirements are met (e.g., no more than 20 nephelometric turbidity units (NTUs) at 500 feet downstream of construction).

The Proposed Action would include a meander channel complex consisting of a channel (IC-1), a slough (IC-2), and wetlands (W-1 and W-2). Large wood placement (SLJ-1 and SLJ-2 described above) at the downstream end of the project site would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. Construction of this complex would increase channel length, complexity, and sinuosity and would also increase slope in this section of the channel to facilitate boat passage. The meander complex and floodplain would provide a diversity of water depths and velocities across a wider range of flows than the existing mainstem channel configuration.

The meander complex, wetlands, slough, and wood structures would restore some complexity to the river and promote a dynamic channel morphology. Activities in area IC-1 would form the meander channel with the two adjacent wetlands (W-1 and W-2) and a slough with a medial bar (IC-2) that would hold slackwater at flows below 600 cfs. The IC-1 channel would provide baseflow water conveyance and boat passage through the R-1 floodplain area through a bend to the right forced by the U-2 constructed landslide deposit. Flows greater than about 600 cfs would spill over the channel banks and inundate the R-1 floodplain, generating large increases in the wetted area and rearing habitat availability as flows increase, with the range of flows typical of the period when juvenile salmon are in the river. Excavation of the IC-1 channel would require 181,900 cubic yards of excavation.

The IC-2 slough occupies a 600-foot-long section of the Trinity River channel downstream from the U-2 constructed landslide deposit. This section of channel would be partially filled with clean gravel and cobble to construct a diagonal bar that crosses the slough from right to left; large wood and slash would also be placed in the slough. The slough would contain slackwater when mainstem flows are less than about 600 cfs. At flows greater than 600 cfs, the slough would receive discharge conveyed across the R-1 floodplain. The slough would maintain flowing water with velocities suitable for juvenile Chinook salmon rearing (less than 2 cfs) over at least half of its area at flows up to 4,000 cfs.

Wetlands W-1 and W-2 are features that already exist on the landscape. These two wetland features would be left intact to preserve over-summer salmon rearing habitat and habitats used by frogs, turtles, and other riverine species. Both wetland features are surrounded by desirable vegetation that would also be preserved. Because these wetlands are located in areas where inundation frequently occurs, they can be easily occupied by the main river flow and could potentially contribute to the development of an anastomosing channel pattern.

2.1.6 Contractor Use Areas (C)

Contractor use areas would be used for stockpiling materials, staging equipment, contractor parking, and similar activities. They may also serve as transportation corridors for moving equipment and materials from one activity area to another. To the extent possible, sensitive areas within contractor use areas (e.g., wetland and riparian areas) would be maintained. As needed, a portion of C-1 would be used to process

and sort river rock into needed sizes for use in project construction. Water from onsite sources[8] would be applied to these areas for dust abatement, as directed by the Contracting Officer.

Construction access to the site would be via Sky Ranch Road using two new temporary access roads. Access within the site would use these new roads as well as an existing road network that would connect the project design features to contractor use areas and upland spoils areas. Restoration of the valley at the site requires moving spoils to offsite locations, one of which is the U-1 spoils area located about 1,000 feet to the south of the main rehabilitation area (shown in light yellow on Figure 2-1). U-1 would accommodate approximately 143,000 cubic yards of excavated material.

2.1.7 Access Routes and Temporary Crossings (A)

Temporary access routes and crossings would be constructed to connect the activity areas to the primary entrance route (Figure 2-1 and Table 2-1). Access roads would support equipment access and construction within the project ESL. Whenever possible, existing roads would be used for access, although some widening may be necessary. To comply with WSRA requirements, road use would remain inconspicuous to river users and those outside of the project area and the roads would not be actively maintained. Temporary access routes would be decommissioned and revegetated with native species after the project is completed as part of the revegetation plan. It is anticipated that access routes would be used for up to 5 years post-project for revegetation management (e.g., planting and irrigation). The temporary access routes would then be removed or converted to walking trails.

After IC-1 construction, construction of river fords would be required where access had originally been constructed during excavation of the IC-1 channel. Temporary crossings would be created using imported clean gravel and native alluvial materials excavated from the bed and bank of the Trinity River, authorized activity areas, or other clean adjacent sources (e.g., the Eagle Rock quarry). Temporary crossings (e.g., at A-5, A-6, and A-7) would be designed and constructed, as needed, to meet requirements for heavy equipment such as trucks and excavators.

The number of vehicle trips using river crossings would be minimized to the extent possible, and these fords would not be used to transport construction materials (e.g. large wood and vegetation materials) across the river. Due to requirements to retain passage for fish and boats, at least one-third of a river crossing would be submerged to a minimum depth of 1 foot under base flow conditions. Construction of such temporary river crossings would likely require some vegetation removal on either side of the crossings. All temporary crossings would be constructed in a manner that would not impede passage of aquatic organisms or navigability of vessels at the crossings. A temporary crossing at A-9 would be built of clean material after IC-1 is open to river flows and, therefore, would not need to allow passage of aquatic species and boats.

If post-construction revegetation efforts require maintenance (additional plantings or irrigation), a temporary crossing may be constructed along the IC-1 channel to provide equipment access during the in-river work period.

BMPs would be used to reduce the impacts of road-related sediment on the riparian and aquatic environments (see Appendix E – Environmental Commitments).

2.1.8 Revegetation

Approximately 39.5 acres would be disturbed by project activities. The removal of tailings and subsequent reconstruction would result in several new landforms. A new large upland feature at U-1 (5.6 acres) and new floodplain landforms at R-1, R-2, and R-3 (16.7 acres) include existing ponds, wetlands and forested islands. These areas would require active revegetation. The 9.0 acres at the IC-1 and IC-2 features would not require revegetation because they would become in-channel features. About 1.4 acres

[8] Water pumps used in the Trinity River would conform to CDFW and NMFS screening criteria.

of existing wetlands and 0.1 acre of wood features would also require little or no revegetation. The 6.7-acre constructed landslide deposit would be seeded with native grasses and mulched to reduce non-native infestation. The upland areas would also be planted with acorns and dry land plant materials.

Although most of the ESL's 134 acres is denuded of vegetation because of the deep layers of tailings, the construction of project features would result in the removal of approximately 18 acres of vegetation. Most of the vegetation to be removed occurs on tailings between 4 and 30 feet above the historic floodplain elevation. Existing vegetation at or below the final constructed elevation would remain in place. The new floodplain would be markedly different from existing conditions. Monthly mean flows will inundate the entire 18-acre floodplain through June during the first few years after construction. This inundation will create favorable conditions for riparian vegetation recruitment and vigor. The area will be reconfigured by the inundation, increasing surface heterogeneity and the potential for complex channel and riparian vegetation interactions over time.

Primary revegetation prescriptions include:

- Willow clumps and cottonwood poles – rooted willows would be salvaged from areas subjected to construction activities.
- Willow and cottonwood clusters – primary revegetation from both salvaged and nursery stock would be planted on the new floodplain surfaces.
- Cottonwood-dominant upland plantings – would contain a combination of long cottonwood poles, bareroot/container plantings, and acorn plantings.
- Upland plantings – bare root/container plantings and acorn plantings of plants suited to hot, dry conditions.
- Seeding – would consist of seeding with a mix of native herbaceous forb and grass species suited to hot, dry conditions.

Impacts to vegetation are anticipated in most activity areas. Revegetation is not illustrated on Figure 2-1 because it overlaps with most of the other activity areas. Most of the areas left barren after construction (e.g., spoils areas, graded features, and disturbed portions of contractor-use areas) would be planted, but no areas would be specifically disturbed for the purpose of replanting. The temporary access routes would be planted with conifers and madrones as part of decommissioning.

Project activities are designed to ensure that riparian vegetation in particular is minimally affected by implementation of the Proposed Action and is replaced at a 1:1 ratio to meet CDFW's standard of no net loss of riparian habitat in the Trinity River corridor. Revegetation would provide aquatic refugia at high flows, improve terrestrial habitat for birds and other wildlife, and provide future wood recruitment and terrestrial nutrient input to the river. Revegetation efforts would emphasize actions to create conditions that promote natural revegetation via the creation of wet (riparian) conditions. These actions would include incorporating woody material into the soil matrix in upland activity areas to enhance moisture retention and soil productivity.

Revegetation of riparian and upland areas would rely on a combination of planting and natural recruitment of native species. Revegetation is consistent with TRRP's 2016 Draft Riparian Revegetation and Monitoring Plan and the needs of BLM and other cooperating, responsible, and trustee agencies and landowners. Native willows salvaged from activity areas during initial clearing efforts would be stored and used to revegetate activity areas; the willows would be replanted during construction to speed vegetation recovery. Replanting of affected native vegetation (e.g., shrubs, trees) would be completed after construction in accordance with a site-specific revegetation plan prepared by the TRRP and may include watering during the first 3 years post-planting. Water for any irrigation would be pumped from the Trinity River, consistent with existing riparian water rights and as made available from willing

landowners, or from the river on public lands as authorized by BLM. Post-project monitoring may indicate the need for additional irrigation and other measures to ensure successful revegetation. These measures may include weeding, in-planting, and replanting as conditions require.

Soil amendments, such as locally obtained wood grindings and slash, would be incorporated into the soil before planting, and all disturbed areas more than 4 feet above the summer baseflow water surface elevation would be mulched with weed-free wheat straw at the rate of 2 tons per acre. Revegetation activities may start during construction (e.g., planting and watering, as appropriate) and would continue during the wet season (October through March) after final grading and site stabilization measures have been completed. Planting and seeding efforts may extend into the year following construction depending on site and weather conditions. Herbaceous bare root material and hardwood poles would be used if planting occurs in or after November. Container stock would be obtained from sources that follow best practices for the reduction of phytophora pathogens.

2.1.9 Construction Methods and Schedule

The proposed activities would take place in two phases. If fully funded, transport of up to 500,000 yards of material could be completed in approximately 1.5 years prior to in-stream channel rehabilitation work. Initial excavation and rock hauling could begin as soon as the fall of 2021. Once the majority of excavation and transport of mine tailings material has been completed, work would shift to in-channel restoration work. In-channel and floodplain work would most likely occur over one summer–fall period, although the schedule is also dependent on funding. With planned TRRP funding levels, project work could continue through the summer of 2025. The intensity of trucking materials to the Eagle Rock quarry would be substantially decreased if the project duration is extended.

In general, in-river construction is proposed to take place between July 15 and October 15. After September 15, additional BMPs would be in place to minimize impacts to adult coho and Chinook salmon. Excavation, processing of excavated material, and placement of excess material in Oregon Gulch upland areas would occur primarily during the in-river construction window. Floodplain and upslope construction (e.g., excavation and movement of materials to upslope areas and revegetation) would take place concurrently, but also could occur throughout the year so long as water quality impacts were immeasurable. Revegetation activities would occur primarily in the wet months. The rehabilitation activities are proposed for implementation in the summer after removal of materials to the Eagle Rock quarry, which would be between 2023 and 2025, Large-scale revegetation efforts would not occur until the fall after construction. After site construction, maintenance activities (including efforts to maintain or enhance vegetation or riverine habitat diversity (e.g., channel topography)) may be conducted as needed in authorized public land use areas in accordance with the general environmental commitments listed in Appendix E. A detailed discussion of the construction methods and activities is provided in Appendix D.

The flow-release schedule established for a particular water year could limit surface disturbance activities below the ordinary high-water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC-1 or the R-areas) on-site would occur during the summer–fall construction period. Revegetation work (e.g., planting of willow pole cuttings and/or container plants and seeding with native grasses) would generally take place during construction, in the wet season (fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities for site maintenance would be conducted as needed post-project during the time period covered by the BLM ROW; affected landowners would be notified in advance.

2.1.10 Environmental Commitments

Reclamation, as the implementing agency for the proposed rehabilitation activities, has committed to implementing the mitigation measures identified in the Master EIR. A number of design features have been developed and incorporated into Alternative 1 to reduce or eliminate adverse effects as defined under NEPA; these are considered environmental commitments for purposes of the NEPA analysis. They

also serve as CEQA mitigation measures that would be implemented in accordance with a project-specific mitigation monitoring and reporting program (Appendix F).

The environmental commitments listed in Table 2-2 are fully described in Appendix E. In most cases, these commitments are equivalent to the CEQA mitigation measures described in Appendix F. This approach is consistent with guidance issued by the Council on Environmental Quality (CEQ) for federal agencies in implementing, monitoring, and evaluating environmental commitments identified in EAs completed for compliance with NEPA. Throughout this document, these environmental commitments are identified with a unique label (e.g. EC-CU-1).

Table 2-2. Environmental Commitments

Resource	Commitments
Mineral Resources	EC-MR-1
Fluvial Geomorphology and Soils	EC-GS-1, EC-GS-2
Water Quality	EC-WQ-1, EC-WQ-2, EC-WQ-3, EC-WQ-4, EC- WQ-5
Fishery Resources	EC-FR-1, EC-FR-2, EC-FR-3, EC-FR-4, EC-FR-5
Vegetation, Wildlife, and Wetlands	EC-VW-1, EC-VW-2, EC-VW-3, EC-VW-4, EC-VW-5, EC-VW-6, EC-VW-7, EC-VW-8, EC-VW-9, EC-VW-10
Recreation	EC-RE-1, EC-RE-2
Cultural Resources	EC-CU-1, EC-CU-2
Transportation and Circulation	EC-TC-1, EC-TC-2, EC-TC-3, EC-TC-4
Air Quality	EC-AQ-1, EC-AQ-2, EC-AQ-3, EC-AQ-4
Noise	EC-NO-1, EC-NO-2
Public Services	EC-PS-1, EC-PS-2

2.2 ALTERNATIVE 2

Alternative 2 (No Action) represents ongoing activities and operations of the TRRP and other entities involved in restoring the Trinity River with the exception of the Proposed Action. Under the No Action Alternative, no rehabilitation activities would be implemented at the Oregon Gulch site. Other activities already being implemented in compliance with the 2000 ROD would continue to be implemented. These include:

- Implementation of the annual flow release schedule based on recommendations of the Trinity Management Council (TMC) to Reclamation; and
- Implementation of annual high-flow coarse sediment (gravel) augmentation at designated long-term sites along the Trinity River mainstem, based on recommendations of the TMC to Reclamation; and
- Implementation of watershed restoration and rehabilitation projects at other locations in the Trinity River Basin, including those funded by the TRRP, members of the TMC, BLM, and the Trinity County Resource Conservation District.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER EVALUATION

In 2010, the TRRP developed conceptual designs for nine project sites throughout the restoration reach, including two concepts for the Oregon Gulch project site (CH2M Hill and Entrix 2010). The current

design process started by reviewing these two concepts. The Yurok Design Group then took a new approach to the design process. It solicited conceptual design input from the other TRRP design groups prior to developing its own concepts to ensure that its conceptual designs represented input from across the TRRP. The input from the other design groups was developed during individual brainstorming meetings. The various brainstorming sessions developed a total of 15 different conceptual ideas. Combining similar design elements reduced the number of brainstorming concepts for consideration to 10, including the original two from 2010.

Within the general confines of the defined activity areas and rehabilitation site boundaries, the designers used models to understand the potential effects that changes in various grades, side slope angles, and elevations might have on how the constructed features would function under various flow conditions. The designers have evaluated how these changes in design would affect modeled water depths, velocities, and sheer stresses under post-construction conditions and how these results might affect long-term maintenance and evolution of design features. The results of modeling were used to select optimal configurations, presented in this EA/IS as the Proposed Action, for maximum aquatic habitat quality for juvenile salmonids (e.g., depth, velocity, and substrate) and to predict changes to the river and floodplain (e.g., erode, aggrade, or vegetate) under envisioned ROD flow conditions.

2.3.1 30 Percent Design Alternative

The 30 percent design alternative adopted the design team recommendations to reconnect the river with its valley and maximize the amount of functional floodplain. Two alternatives were developed for the 30 percent design stage, a LAM alternative and an anastomosing (stage-zero) channel alternative. The two alternatives are described in detail in the 30 percent design report (Yurok Tribe 2018).

The LAM alternative focused on increasing sinuosity through the reach by extending the length of the main channel by about 8 percent. It also features side channel and high-flow channel creation through existing tailings ponds as well as extensive tailings lowering to encourage riparian growth. This design is included in the final project design (Yurok Tribe 2020).

Stage zero is a design concept based on a low-flow stream channel approach in which the stream is designed to overtop it banks and inundate an extensive valley bottom area at relatively low discharge levels. This approach results in a stream condition in which a network of small channels provides greater ecological benefits than a single large stream channel (Cluer and Thorne 2014). However, the necessity to maintain boat passage precludes the implementation of a true stage-zero design.

2.3.2 60 Percent Design Alternative

The 60 percent design was a blend of the two 30 percent alternatives and was based largely on the stage-zero design concept. A primary concept in this restoration approach is restoring the valley grade across the valley bottom both longitudinally and laterally. At discharges greater than 600 cfs, flow would be conveyed across the valley grade surface, creating abundant slow water habitats used by juvenile salmonids. Unlike for the LAM, however, modeling showed the 60 percent design channel was too narrow and its slope too low for it to convey flows greater than about 600 cfs. For this reason, this design was dismissed from consideration, and the general concept of a stage-zero design was employed for the project design.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION TO THE ANALYSIS

This chapter describes the affected environment at the Oregon Gulch rehabilitation site and analyzes the potential environmental impacts associated with implementing Alternative 1, the Proposed Action, and Alternative 2, the No-Action Alternative. Both alternatives are described in Chapter 2; additional details relevant to Alternative 1 are in Appendix D. The analysis for each resource area includes discussions of the existing environmental setting, applicable significance criteria, potential environmental impacts, and project design features (e.g., environmental commitments).

There is a clear distinction between NEPA and CEQA with respect to mitigation measures. No new CEQA mitigation measures beyond those described in the Master EIR were identified for the resource topics addressed in this chapter. The environmental commitments listed in Table 2-2 and fully described in Appendix E have been incorporated into Alternative 1 to ensure that there are no significant impacts as defined under CEQA. No new CEQA mitigation measures beyond those adopted in the Master EIR were identified as necessary to address potential effects to the resources addressed in this chapter.

An alphanumeric coding system that corresponds to the CEQA mitigation measures found in Appendix A of the Master EIR/Programmatic EA is used to identify each CEQA mitigation measure incorporated into the Proposed Action as an environmental commitment pursuant to NEPA. Where a NEPA environmental commitment corresponds to a referenced CEQA mitigation measure as described in the Mitigation Monitoring and Reporting Program (MMRP) (Appendix A of the Master EIR), it is cross referenced in Table 3-8 at the end of this chapter (e.g., EC-CU-1 [4.10-2a]).

Table 3-1 identifies the resource topics considered in this document as well as those eliminated from further consideration; Appendix A contains an Environmental Checklist Form based on the Master EIR/Programmatic EA that was used to screen and identify resource topics and issues to carry forward for further evaluation. Resource topics eliminated from further consideration due to the resource not being present or the issue not being a concern at this rehabilitation site are also listed in this table.

Table 3-1. Resource Topics Considered or Eliminated from Further Consideration in This EA/IS

Resource Topic	Analyzed in EA/IS?	Comments
Visual Resources/ Aesthetics	Yes	Temporary and long-term changes to visual resources or aesthetics are addressed. Scenic resources associated with scenic highways are not present. Light and glare were addressed in the Master EIR, and no issues were identified.
Agricultural Resources	No	Agricultural lands (e.g., timber production lands) and uses are not present.
Air Quality	Yes	Temporary construction-related emissions and dust are addressed. No long-term air quality impacts, including greenhouse gas contributions, are expected.
Cultural Resources	Yes	Impacts on tribal cultural resources, archaeological resources, and Historic Properties are addressed. The alluvial nature of the geology of the project ESL is not conducive to the occurrence of paleontological resources.

Resource Topic	Analyzed in EA/IS?	Comments
Environmental Justice	No	The Proposed Action would not disproportionately affect low-income or minority populations because these populations do not exist in the project ESL.
Fishery Resources	Yes	Impacts on aquatic habitat and special-status fish are addressed. Proposed project elements would affect anadromous fish habitat and populations. Vehicular river crossings would create water quality issues, affect fish habitat, and increase the potential for a spill of hazardous materials into the river. [a] Proposed *action* elements could affect habitat for native mussels.
Forestry Resources	Yes	Forestry resources are addressed. This topic is covered in the Vegetation, Wildlife, and Wetlands section.
Geology and Geologic Hazards	No	Unique geological resources are not present. Geologic hazards were addressed in the Master EIR, and no issues were identified.
Geomorphology and Soils	Yes	Soil disturbance, erosion potential, changes to the geomorphology of the river, and disposal of excavated materials are addressed in the Soils and Geology section.
Greenhouse Gases	Yes	Greenhouse gas emissions are addressed in the Air Quality section.
Hazardous Materials	No	Hazardous materials were addressed in the Master EIR, and no issues associated with hazardous materials sites were identified. Use of hazardous materials during construction activities is addressed in the Soils, Fishery Resources, Wildlife, and Water Quality sections.
Hydrology and Flooding	Yes	Changes to the hydrology of the river and floodplain effects are addressed in the Hydrology and Flooding section.
Indian Trust Assets	Yes	Impacts on Indian Trust Assets associated with uses of the river and its resources (e.g., fisheries) are incorporated by reference from section 7.17 of the Master EIR.
Indian Sacred Sites	No	No Indian Sacred Sites have been identified in or in close proximity to the project ESL. Cultural resource environmental commitments cover potential discoveries.
Land Use	Yes	Consistency with federal agency resource management plans is addressed. Consistency with the Trinity County General Plan is also addressed.
Mineral Resources	Yes	Impacts on recreational mining and from use of mineral resources are addressed. These topics are addressed in the Recreation, Geomorphology, and Soils sections.
Noise	Yes	Increased noise during construction activities is addressed in the Noise section.
Population and Housing	No	No populations or housing would be affected; activity areas were configured to avoid recreational residences.
Public Health and Safety	No	Hazards to the public were addressed in the Master EIR, and no issues were identified. Indirect public health or safety concerns are addressed in the Air Quality, Noise, Recreation, and Transportation and Traffic sections.
Public Services	No	Public services were addressed in the Master EIR, and no issues associated with the increased demand for or disruption of public services were identified. Access-related issues are addressed in the Transportation and Traffic sections.

Resource Topic	Analyzed in EA/IS?	Comments
Recreation	Yes	Potential disruptions to recreational uses are addressed in the Recreation section.
Socioeconomics	No	Socioeconomics were addressed in the Master EIR in the Population and Housing section, and no issues were identified.
Transportation and Traffic	Yes	Increased traffic and access-related issues are addressed in the Transportation and Traffic section.
Tribal Cultural Resources	Yes	Tribal cultural resources are addressed in the Cultural Resources section.
Utilities and Energy	No	Utilities and energy were addressed in the Master EIR, and no issues were identified and this topic is not analyzed in this EA/IS.
Vegetation, Wildlife, and Wetlands	Yes	Vegetation removal, disturbance to wildlife, and modifications of wetlands are addressed in the Vegetation, Wildlife, and Wetlands section. Proposed project elements could alter amphibian and reptile habitat and impact resident species. Restoration activities have the potential to introduce noxious weeds into the area.
Water Quality	Yes	Temporary and long-term water quality impacts are addressed in the Water Quality section.
Wild and Scenic Rivers	Yes	The recreation and aesthetic values of the Trinity River are addressed in the Wild and Scenic River section. Proposed project elements could impact Wild and Scenic River characteristics, and recreational activities. The project ultimately enhances Wild and Scenic River characteristics.

Notes:
[a] Also applies to Hazardous Materials and Water Quality

3.2 LAND USE

3.2.1 Affected Environment

The project site spans 0.8 river mile of the Trinity River near Junction City, California. The Federal Emergency Management Agency (FEMA) 100-year flood zone spans the entire valley bottom. No houses are located in the 100-year flood zone but one house and its well are located in the 500-year flood zone immediately adjacent to the 100-year flood zone boundary. The project ESL encompasses approximately 134 acres of both federal and private lands. About 92 percent of the ESL area is managed by BLM. Public access to the project ESL from river right is via Sky Ranch Road, which intersects with SR 299 approximately 2 miles north of the project ESL. There is no public access to the project ESL from river left.

New and existing access routes would provide entry into both private and public parcels for project activities. The proposed temporary access routes on river right (A-1, A-6, and A-7) would lead from the private parcel along Sky Ranch Road to activity areas on river right. Other access routes (A-2, A-3, A-4, A-5, A-8, and A-9) would provide access to all of the project areas. Four temporary access routes (A-6, A-7, A-8, and A-9) would be used to provide access across the existing river channel and reconfigured riverine and in-channel features (see Figure 2-1).

BLM lands are used primarily for recreational activities associated with the Trinity River. Boats and rafts provide access to BLM lands along both sides of the river through the project ESL. Historic use of the land included mining, and dredge tailings are present along the river corridor.

Private property within the project ESL is situated on both sides of the river and totals 38 acres. There are 12 private parcels adjacent to the project boundary. Most are classified as residential use, but there are no residences located within the project ESL boundary. One of the parcels is designated as Open Space by Trinity County. One of the private parcels adjacent to the project ESL is designated by Trinity County as Agricultural Forest (aka timber production) with a 20-acre minimum lot size and those portions of the parcels in the 100-year floodplain of the Trinity River have an overlay designation of Scenic Conservation.

Land uses on private lands are guided by the Trinity County General Plan and Junction City Community Plan. The ACS and other elements of the Northwest Forest Plan are applicable to all BLM lands in the project ESL.

3.2.2 Environmental Consequences

Alternative 1

The proposed rehabilitation activities would not change the uses of lands in the project ESL nor require changes to land use allocations or zoning designations. Temporary disruptions to nearby property owners and recreationists using the river and adjacent land near the project ESL could occur during the rehabilitation activities (i.e., 3 to 6 months for construction, approximately 2 years for mining waste removal, and up to 5 years for periodic revegetation efforts), but no long-term impacts are anticipated and use of the land in the project ESL would be the same as under current conditions. The Yurok Tribe, which owns the only private parcel in the ESL, is a project partner and has been involved in the planning, design, and implementation of this and past rehabilitation projects. The Eagle Rock quarry would require revisions to its permit and reclamation plan under SMARA and county regulations as discussed in Section 1.5 of this EA/IS.

Recreation-related impacts are discussed in section 3.3, Recreation, and access-related impacts are discussed in section 3.6, Transportation and Circulation. The restored floodplain and habitats would enhance the area for recreationists and would maintain open space and scenic views near the private residences.

Based on the nature of the rehabilitation activities, Alternative 1 would be consistent with current uses and zoning of the project ESL, as defined by BLM and Trinity County. BLM's Redding RMP describes various objectives for resource conditions applicable to federal lands in the project ESL, and the rehabilitation activities would help BLM achieve these objectives for the Trinity River. Alternative 1 would also help BLM ensure compliance with the RMP by helping to meet Riparian Reserve Standards and Guidelines. Additional details concerning the consistency of the TRRP activities with BLM's Redding RMP are presented in Appendices G (ACS), H (Survey and Manage Species), and I (WSR).

Alternative 1 was developed to be consistent with the BLM RMP and the Trinity County General Plan. Therefore, CEQA-specific impacts considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, land uses in the project ESL are expected to remain similar to existing uses. Therefore, there would be no impacts to land use as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.3 RECREATION

3.3.1 Affected Environment

The project ESL encompasses both federally managed and privately owned land. The primary use of BLM lands in the project ESL is associated with various types of recreational activities. Private lands in proximity to the project ESL are used seasonally for various recreational purposes (e.g., fishing).

The Trinity River provides year-round recreational opportunities, including boating, kayaking, canoeing, rafting, inner tubing, fishing, swimming, camping, gold panning, wildlife viewing, picnicking, hiking, and sightseeing. Fishing for Chinook salmon, steelhead, and rainbow and brown trout is a major recreational activity on the Trinity River throughout the year but is most prevalent between April and December.

BLM and the U.S. Forest Service issue up to 100 permits for commercial fishing guides along this reach of the Trinity River. The Forest Service also issues 13 rafting permits for the river, although most rafting occurs downstream of the project ESL. Visitor use in the project ESL is generally light throughout the year, with an occasional bank fisherman or a drift boat or raft transiting the area.

There are no campgrounds or other formal recreational sites in the project ESL, and public access to BLM lands in the project ESL is limited on both sides of the river due to the pattern of private ownership in and adjacent to the project ESL as well as the lack of a bridge or ford.

3.3.2 Environmental Consequences

Alternative 1

Alternative 1 would require construction in the active river channel, the floodplain, and adjacent upland areas, as described in Chapter 2 and Appendix D. Construction activities could result in temporary disruptions to access from Sky Ranch Road on river right. However, there are no direct public access sites available on river right in the ESL, and river access and recreational opportunities would continue to be available at other locations along the river. Because disruptions to recreational activities in the project ESL would be temporary, this impact would be less than significant.

Flows that typically contribute to good fishing tend to be clear. Temporary increases in turbidity as a result of this alternative may affect the recreational experience of anglers and the aesthetic values held by other recreationists. Temporary increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in section 4.8, Recreation, of the Master EIR) and could adversely affect aesthetic resources. Four environmental commitments have been integrated into this alternative in order to reduce the impacts of increased turbidity levels on recreational users (see Appendix E, EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a-2c], EC-WQ-3 [4.5-3a-3c], and EC-WQ-4 [4.5-1e]).

Implementation of Alternative 1 could temporarily increase turbidity and total suspended solids in the Trinity River for some distance downstream of the ESL during construction activities. The level of the increase would be largely dependent on the flow regime at the time of construction. 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 such as recreation (see Section 3.11). The extent of downstream sedimentation would be a function of instream flow velocity and particle size. For example, fine-grained sediments like silts and clays could be carried several thousand feet downstream of the project ESL, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit.

Construction activities associated with this alternative could pose a temporary physical hazard to recreational users of the river and cause short-term resource damage to lands used for recreational activities in and adjacent to the project ESL. Potential physical hazards to recreationists include the presence of temporary river crossings (e.g., A-5, A-6, and A-7), operation of construction equipment and vehicles in and around the rehabilitation site, changes in the river's subsurface movement as a result of

the in-channel addition or removal of gravel, the addition of wood into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) from construction equipment and vehicles operating in and adjacent to the river. The potential for hazardous material spills and unstable riverbanks and/or uplands resulting from excavation, material addition, road creation, and vegetation removal could also result in a hazard to recreational users. It is possible that the IC-1 activity area may undergo a period of temporary shallowing in which boat passage may become difficult. Such a situation would be unlikely to persist for more than a few years under normal flow conditions, but in the event of a prolonged drought, boat passage could remain an issue until larger floods return.

Reclamation would prepare and post precautionary signage and public notifications warning of in-river construction in order to reduce the hazards to recreational users that would be associated with in-river construction activities (see Appendix E, EC-RE-1 [4.8-1a]). This approach has worked well for previous TRRP projects and has been particularly effective in reducing impacts on in-water recreational activities such as boating and fishing over the past 10 years.[9]

After construction is completed, the 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 in the project boundaries.

With the inclusion of CEQA mitigation measures described in this section, impacts under CEQA considered under this resource topic would be less than significant (see Appendix E, EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a]) (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, recreational resources and uses in the project ESL are expected to remain similar to existing conditions. Therefore, there would be no impacts to recreational resources or disruption of uses as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.4 VISUAL RESOURCES/AESTHETICS

3.4.1 Affected Environment

The Trinity River is considered an important aesthetic and visual resource for residents of Trinity County and visitors to the area. The river is an integral component of the communities and residential areas throughout the county. Residents and visitors actively use the river for recreation, both on and adjacent to the river. The river also offers a variety of landscapes, many of which are incorporated into the rural residential lifestyle of Trinity County.

This section describes the scenic values and visual resources that are known to occur in the project ESL. BLM is responsible for managing its lands for multiple uses while ensuring that the scenic values and open space characteristics of these lands are considered before authorizing actions on these lands. BLM accomplishes these responsibilities through its Visual Resource Management (VRM) system. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or observation points. VRM classes are used to identify the degree of acceptable visual change in a landscape based on its physical and sociological characteristics. Classes I and II are the most valued, Class III represents a moderate value, and Class IV is of the least value. The site boundary is within a VRM Class II area.

[9] Section 3.14 (Wild and Scenic Rivers) and Appendix J provide additional information on potential impacts on fishing and other water-based recreation.

BLM Manual 8431, Visual Resource Contrast Rating, provides the following management objectives for VRM Class II (BLM 1986):

> *Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.*

Due to the lack of sensitive receptors, remote setting, and limited public access, key observation points were not developed for this project. Other than seasonal access by landowners and nearby residents, there are no public viewpoints to the project ESL. Due to the nature of the tailings deposits and extensive riparian vegetation, views from the river are limited other than from directly upstream or downstream.

Because of the rural nature of the river corridor, the primary sources of artificial light within or adjacent to the project ESL are limited to vehicle headlights on Sky Ranch Road and Dutch Creek Road. Glare may occur during the daylight hours as the sun is reflected off vehicles and equipment that are occasionally operating or parked within activity areas on a temporary basis or the water or light-colored alluvium associated with floodplain and terrace features.

3.4.2 Environmental Consequences

Alternative 1

Alternative 1 would affect BLM lands in the project ESL with the VRM class objective of II (BLM 1993). The potential impacts of this alternative would include changes brought about by the removal of vegetation, construction of inundated surfaces and in-channel features, construction of or improvement to access routes, creation and use of staging and gravel processing areas, wood placement, and use of upland areas for construction spoils. Once completed, these 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. The adverse impacts are expected to be temporary. The long-term outcome should improve the visual diversity of the corridor, and the short-term (i.e., 1–5 years) impacts would diminish over time.

Activities associated with this alternative are intended to be not only functional (e.g., to enhance fisheries and restore river meanders), but also to complement the aesthetic values and visual resources associated with the rehabilitation site. Overall, this alternative incorporates the project ESL's diversity of landscapes and vegetation types to define the location, character, and magnitude of the rehabilitation activities at the site. For example, materials excavated from historic tailings piles would be removed from the floodplain and the floodplain returned to a more natural-looking riverine landscape. Retention of existing vegetation at key locations (e.g., activity areas U-1, U-2) to screen upland and staging activities would lessen the degree of visual impact. Furthermore, to conform with agency visual resource guidance, SLJ and wood placement construction would emphasize the appearance of naturally occurring wood along wild rivers. To the extent possible, SLJs would be installed so that they emulate naturally occurring log jams, with roughened edges and angled placement. The SLJs and log placement would blend in with the scenic character of the river.

From the river itself, most of the adjacent activity areas—the IC, R, SLJ, and WP areas—would be at least partially visible to boaters. Because of their historic character, the tailings are considered a visual asset by some.

The activities described in Chapter 2 and Appendix D provide a framework for reestablishing the physical processes necessary to enhance the alluvial attributes and complexity of the river channel and floodplain over time, particularly those attributes that are flow dependent. Over time, this alternative would produce

gradual, ever-improving changes to the aesthetic quality of this reach of the Trinity River while maintaining the character of the surrounding land uses.

Implementation of the Proposed Action would increase the potential for increases in turbidity levels during and, to a lesser degree, after construction. Flows that typically contribute to good fishing tend to be clear, although a small amount of turbidity may reduce fish wariness; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in section 4.8, Recreation, of the Trinity River Master EIR) and could adversely affect aesthetic resources. Five specific environmental commitments developed to reduce water quality impacts have been incorporated into this alternative to reduce the impacts of increased turbidity levels that could be visible to recreational users (see Table 2-2 and Appendix E, EC-WQ1 through EC-WQ-5).

Under Alternative 1, sensitive receptors who could be exposed to changes in the visual character of the Trinity River and the adjacent corridor as a result of construction and revegetation activities would be limited in terms of the number of viewers and the limited timeframe of activities. Because of the nature of the project, the rehabilitation activities would not result in degradation or obstruction of a scenic view. While some increase in the level of artificial light or glare would occur during the construction activities, this impact would be limited in both time and intensity. Therefore, there would be no impacts to aesthetic resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

Alternative 2

Under Alternative 2, there would be no degradation or obstruction of a scenic view as a result of construction because the project would not be implemented. The level of artificial light or glare would be similar to the existing condition. Therefore, there would be no impacts to aesthetic resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.5 CULTURAL RESOURCES

Cultural resources include prehistoric, historic, archaeological, and tribal properties. The National Historic Preservation Act (NHPA) of 1966 is the primary federal legislation addressing the federal government's responsibility related to cultural resources. Title 54 U.S.C Section 306108, commonly known as Section 106 of the NHPA, requires the federal government to take into consideration the effects of an undertaking on any historic property, i.e., cultural resources listed on or eligible for inclusion in the National Register of Historic Places. The BLM, consistent with its authorities and responsibilities under the Federal Land Policy and Management Act of 1976 (FLPMA), is charged with managing public lands located in the states of California and Nevada in a manner that will "protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values," and "that will provide for outdoor recreation and human occupancy and use."

Authorities for managing cultural resources and programs of historic preservation exist under NEPA (Pub. L. 91-190), the FLPMA (Pub. L. 91-579), the Archaeological Resources Protection Act (ARPA, 16 USC 470), the Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001), the Historic Sites Act of 1935 (Pub. L. 73-292), the Antiquities Act of 1906 (16 USC 431-433), the American Indian Religious Freedom Act (AIRFA, Pub. L. 95-341), Executive Order 13007 ("Sacred Sites", 61 FR 105), and the NHPA (Pub. L. 89-665).

Federal law requires that the Proposed Action comply with Section 106. Pursuant to 36 CFR Section 800.2(a)(2), if more than one federal agency is involved in an undertaking, the agencies may designate a lead federal agency to act on their behalf to fulfill their collective responsibilities under Section 106. The BLM has designated Reclamation as the lead federal agency for the Section 106 process for this Proposed Action.

As described above in section 1.6, Assembly Bill 52 (AB 52) was approved by the Governor of California in September 2014. AB 52 requirements apply to projects with a Notice of Preparation or a Notice of Negative Declaration or Mitigated Negative Declaration filed on or after July 1, 2015. Therefore, the requirements of AB 52 did not apply to the preparation and adoption of the 2009 Master EIR prepared for the TRRP. However, implementation of the Section 106 process ensures that tribal cultural resources were considered and incorporated into the Master EIR, which is incorporated by reference into this EA/IS. Moreover, the MMRP for the Master EIR (Appendix F) adopted by the Regional Water Board includes measures consistent with the protection of tribal cultural resources, including tribal consultation, resource evaluations, and avoidance, minimization and other specific mitigation as necessary at the site scale.

Background research used to develop this section of the EA/IS included a review of the files at the Northeast Center of the California Historical Resources Information System, Trinity County Historical Society/J.J. Jackson Museum, and the files of the BLM Redding Field Office applicable to the area of potential effect (APE) delineated by Reclamation and BLM. Previous archaeological and historical literature pertinent to the general location was given special attention. The current list of contacts from the Native American Heritage Commission (NAHC) was consulted, and initial contacts were made. Other local individuals representing tribes collaborated in the investigation.

3.5.1 Affected Environment

Archaeological studies along the Trinity River corridor have suggested human occupation reaching back to more than 7,000 years before present (Fitzgerald and Hildebrandt 2002; Sundahl and Berrien 1986). This reach of the Trinity River is the traditional homeland of the Wintu, who are now organized as the Nor-Rel-Muk Wintu Nation and include Wintu representatives at the Redding Rancheria. The prehistory of the Trinity River area has received study in conjunction with various BLM, California Department of Transportation (Caltrans), and Reclamation projects conducted throughout the watershed, largely as the result of archaeological field work accomplished in preparation for reservoir construction in the river valleys, TRRP restoration projects, highway projects, and BLM projects. Additional information on the cultural resources, Native American communities, and mining history of the Trinity River watershed is provided in section 4.10.1 of the 2009 Master EIR and on the TRRP website in reports written by AECOM (2013) and Bailey (2008).

The area of potential effect (APE) for cultural resources includes proposed activity areas within the 134-acre Oregon Gulch ESL and the non-adjacent 22-acre Eagle Rock quarry (Figure 1-1). The quarry is proposed for placement of tailings removed from privately owned activity areas on river right and is located within a current industrial zone that lies in the La Grange Historic mining district. The Eagle Rock quarry area, the entire Oregon Gulch ESL, and some adjacent areas, were all surveyed for cultural resources over the course of eight days in 2019 and 2020.

Within the APE, the cultural resource survey identified two large piles of bucket-line dredge tailings (P-53-002369 and P-53-002370). These were previously determined to not be individually eligible for the NRHP (AECOM 2013a, Rich et al. 2015) with agreement by BLM and Reclamation; however, AECOM (2013a) and Rich et al. (2019) suggested that the northern tailings field (P-53-002369) may contribute to an as yet unidentified industrial mining landscape. P-53-002369 is targeted for removal in order to create a new river channel with associated alcoves and floodplain (R-1, R-2, R-3; Figure 2-1). Some of the gravels may be used in upland spoils areas but most of the excavated material would be transported 3.7 miles (5.9 kilometers) to the Eagle Rock quarry. Disturbances to archaeological resources at this site have been previously mitigated through preservation and interpretation (signage installed off of Sky Ranch Road) of intact dredge tailings at P-53-002354 on BLM lands within the Sheridan Gulch rehabilitation site located approximately 1 mile upriver (Rich et al. 2019). No further mitigation for removal of these tailings is recommended.

The second set of dredge tailings in the APE, P-53-002370, is slated for use as an upland storage area (U-1) and was already disturbed by the TRRP during its 2019 Sheridan Gulch channel rehabilitation project (Rich et al. 2015). At that time, portions of the tailings were used for material placement within the Sheridan Gulch project site and production of gravel for in-river placement. As this site was previously determined ineligible for the NRHP, no further actions are necessary.

The spoils area at the Eagle Rock quarry is encompassed by the La Grange Historic District (P-53-001563). The La Grange mine is one of California's largest hydraulic placer gold mines and is now listed as California Historical Landmark #778. The District has been recommended eligible for listing to the NRHP (Costello and Wee 2000) under multiple criteria. The proposed spoils area would be located within a portion of the district's vast tailings field, recorded separately as P-53-001569. This tailings field extends down Oregon Gulch all the way to the Trinity River and has been used as a commercial gravel quarry since the 1980s. Because of this, Wee and Costello (2001) have suggested the tailings no longer possess the integrity required to contribute significance to the district, and BLM and Reclamation concur.

Although the quarry is currently operating inside the boundaries of P-53-001563 and P-53-001569, continued use of this area for project tailings placement would not reduce the ability of the district to convey its significance.

Pursuant to 36 CFR Section 800, Reclamation, as lead federal agency for Section 106 of the NHPA, must complete the identification and evaluation process through consultation with federally recognized tribes and interested parties, evaluate resources for their eligibility for the NRHP, and, as necessary, assess adverse effects and make a determination regarding effects on cultural resources. Reclamation, in collaboration with BLM, has determined, through the efforts of William Rich and Associates, that there would be no historic properties affected by the Proposed Action. A Section 106 consultation package for the Proposed Action is being prepared for the State Historic Preservation Officer (SHPO) and will be delivered for the SHPO's consideration of the lead agency's recommendation. The project would not be authorized until Section 106 consultation is complete.

3.5.2 Environmental Consequences

Alternative 1

Under Alternative 1, the Section 106 process would be followed. Pursuant to 36 CFR Section 800, documented resources within the APE would be evaluated for eligibility for the NRHP through the consultation process. For any resources found eligible for listing on the NRHP, an assessment of effects would be made and, if necessary, adverse effects resolved. The Section 106 process would be completed prior to the signing of the decision document for the project.

Alternative 2

Under Alternative 2, the condition of cultural resources would remain similar to existing conditions. There would be no undertaking as defined in 36 CFR Section 800.16(y) and, therefore, no potential effects on historic properties. Furthermore, there would be no impacts to cultural resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.6 TRANSPORTATION AND CIRCULATION

3.6.1 Affected Environment

The transportation infrastructure in the vicinity of the project ESL is typical of a rural environment, with low traffic and sparse development. SR 299 is the main highway in the region and is a designated truck route between the Sacramento Valley and the coastal communities of northern California. The highway goes through Junction City, approximately 0.5 mile north of the project ESL. Traffic counts along SR 299 between Weaverville, northeast of the project ESL, and Big Flat Camp, approximately 8 miles west of Junction City, were between 2,000 and 3,450 average annual daily trips in 2016 (Caltrans 2018).

Sky Ranch Road, part of the Trinity County road system, provides primary access to the project ESL from SR 299 on river right. Surveys conducted by Trinity County in 2012 and 2013 document that the section of the road in the general vicinity of the project ESL has a native soil subgrade with a chipseal overlay; the most recent surfacing was done approximately 15 years ago. Survey results provided by the County indicate that a segment of road north of the project ESL and south of SR 299 ranged in condition between good and poor. Since then, the road surface has become worse, according to local residents. The section of Sky Ranch Road that crosses Oregon Gulch Creek has experienced damage from flooding and a collapsed culvert and has been reduced to one lane. Replacement of the culvert is at the discretion of the Trinity County transportation department.

Dutch Creek Road intersects with SR 299 at Junction City and provides access to the project ESL on river left. Dutch Creek Road is a narrow, two-lane paved road that is also maintained by Trinity County. A traffic count on Dutch Creek Road approximately 2 miles north of the project ESL indicates a daily average of approximately 200 trips.

Based on the number of residences accessed via Sky Ranch Road, it is estimated that traffic counts along this road equal fewer than 200 trips daily. Primary travelers along local roads about a mile north of the project ESL are residents and property owners, with occasional recreationists, agency staff, or other users visiting the area. Access to BLM lands within the project ESL is currently via Sky Ranch Road to the Dunmovin Road, an unimproved, gated route on private property.

3.6.2 Environmental Consequences

Alternative 1

Under the Proposed Action, construction equipment and vehicles would temporarily increase traffic on Sky Ranch Road during the initial tailings removal period. During the rehabilitation construction period, heavy equipment (e.g., large trucks, excavators, and backhoes) would be mobilized to the project site prior to the rehabilitation activities and would be removed upon completion of these activities to minimize the number of daily trips, in accordance with the environmental commitments outlined in Table 2-2 (i.e., EC-TC-2 [4.16-2a, 4.16-5a]) and fully described in Appendix E. During construction, 20 to 30 workers and their vehicles would access the project ESL daily. In the initial tailings removal period, between 320,630 and 500,000 cubic yards of tailings would be transported off site for disposal at the Eagle Rock quarry. This would require about 29,000 vehicle trips over the course of 1.5 years, with 17 cubic yards per load. Up to five trucks would work between 8 a.m. and 5 p.m., Monday through Friday, to complete the removal of tailings. This equates to about 75 truckloads per day and an estimated total of 14,330 hours of trucking. Other than hauling materials, construction activities at the project ESL would take place between 7:00 a.m. and 7:00 p.m., Monday through Saturday.

SR 299 is a designated truck route that was built to withstand occasional use by heavy equipment and has a moderate volume of existing traffic. Trucks carrying heavy equipment and materials would operate within the legal weight limits, as determined by the State. The temporary use of SR 299 for access to the project ESL during rehabilitation activities would not significantly change its existing level of service or average traffic volumes, but could have a potentially negative impact on roadway conditions.

The temporary use of Sky Ranch Road in conjunction with temporary access routes could delay or restrict commercial, recreational, and residential access to BLM and private lands, but no road closures would be required. Traffic control measures would be implemented to alert travelers to the rehabilitation activities and minimize conflicts during the activities in accordance with environmental commitments listed in Table 2-2 (EC-TC-1 and EC-TC-4 [4.16-2a, 4.16-5a]). Access to adjacent private properties would be maintained throughout the construction period in accordance with environmental commitment EC-TC-2; however, access to the project site would be restricted to project traffic based on individual agreements with landowners and would not be available to the public during construction.

The use of local roads by trucks and heavy equipment could potentially degrade roadway conditions along Sky Ranch Road and SR 299 due to increased wear and tear; road restoration would be completed after rehabilitation activities are done. Due to the anticipated wear and tear on the road, the TRRP expects to repair impacted sections to meet County requirements for a roughly 1-mile section of the County-maintained Sky Ranch Road between the SR 299 pull-out to the project entrance at Dunmovin Road.

As time and priorities allow, Oregon Gulch, which runs under Sky Ranch Road in a culvert that is partially collapsed near the project ESL access point, has been prioritized for restoration by the Southern Oregon/Northern California Coast (SONCC) Recovery Plan (NMFS 2014), and development of fish passage and stream habitat there would be even more valuable after the Oregon Gulch project is complete. Consequently, the TRRP is working with Trinity County and resource management agencies to prioritize efforts to enhance Oregon Gulch fish passage and stream passage after the project is complete. The TRRP is dedicated to supporting resource-based projects in the Oregon Gulch tributary and vicinity; however, these repairs are outside the scope of this analysis and would require additional analysis and permitting.

In accordance with EC-TC-3 [4.16-4a], Reclamation would survey road conditions before the rehabilitation activities and assess the degree of post-construction restoration that may be needed. Access routes across private land may require some degree of grading and/or resurfacing to restore them to pre-disturbance conditions, and Reclamation would coordinate with the landowners to ensure that these routes are in acceptable condition after the rehabilitation activities. After construction of the project is completed, temporary access routes across public lands would be restored to preconstruction conditions.

Post-construction activities (i.e., revegetation, maintenance, and monitoring) would require intermittent access by TRRP staff and consultants for 3 to 5 years and occasional access for construction equipment in the event that implementation of adaptive management measures is required to ensure success of the rehabilitation activities. This traffic would be minimal and would not affect local traffic volumes or roadway conditions.

With the inclusion of CEQA mitigation measures outlined in Appendix E (EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16- 4a]), impacts under CEQA on traffic and transportation would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, traffic conditions and traffic circulation would remain similar to existing conditions. Therefore, there would be no impacts to traffic conditions as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.7 AIR QUALITY

3.7.1 Affected Environment

Trinity County has a climate characterized by hot, dry summers and cold, moderately wet winters (United States Department of Agriculture 1998). Most precipitation in the county results from major storms originating in the Pacific Ocean; however, short thunderstorms resulting from localized climatic conditions occur in the summer months. Precipitation at the site is predominantly 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 degrees Fahrenheit (°F) and winter low of 27.3°F.

Trinity County's air quality is generally good. Low population densities, limited industrial and agricultural operations, and minimal traffic congestion contribute to the good air quality. Ambient air quality data are available from the Weaverville air monitoring station, which is located approximately 10 miles from the project ESL. Air quality data from this station may not be a precise representation of ambient air quality in the project ESL, but it does provide a good indication of air quality in the general vicinity.

Locally, air quality and contributions of greenhouse gases (GHGs) to the atmosphere along the Trinity River corridor are influenced by topographic features, microclimate, and pollutants such as road dust and smoke from wildfires in the summer and wood stoves/fireplaces during cold weather (i.e., particulate matter [PM] 10 microns or less [PM 10] and particulate matter 2.5 microns or less [PM 2.5]). Occasional high levels of PM in Trinity County generally coincide with regional wildland fire events during the dry summer months and with localized woodstove use and brush-burning activities during periods of cool, wet weather.

Sensitive receptors consist of human populations, particularly children, seniors, and individuals with health risks, located where there is a reasonable expectation of human exposure to pollutants. The project ESL is not located near a school, hospital, senior housing, or other facilities where concentrations of sensitive receptors may be located. There are, however, a number of residential properties adjacent to the project ESL.

The majority of the residences in and adjacent to the project ESL use wood as a source of heat as well as burn piles to reduce fuels on private parcels. Operation of heavy equipment on private parcels within and adjacent to the project ESL occurs periodically and is a source of vehicle emissions. Both the burning of wood and other vegetation and the operation of heavy equipment periodically contribute to localized increases in pollutants such as PM and GHGs, respectively. Reoccurring wildfires throughout the Trinity River watershed periodically result in smoke and ash that drastically increase the PM levels within and adjacent to the project ESL.

3.7.2 Environmental Consequences

Alternative 1

Rehabilitation activities associated with Alternative 1 would require excavation, grading, disposal of earthen materials, and the use of vehicles and heavy equipment on unpaved roads and access routes, all of which would generate fugitive dust in the project ESL. Fugitive dust emissions would also result from activities associated with vegetation removal. There are few residential properties within or adjacent to the project ESL that would be exposed to temporary changes in air quality.

Transportation and construction activity associated with project implementation would generate GHG emissions from diesel- and gasoline-powered vehicles and equipment. An environmental commitment listed in Table 2-2 and described in Appendix E (EC AQ-1 [4.11-a-1a], [4.11-2a]) is incorporated into this alternative to reduce the impacts to air quality and GHGs. Additionally, the following measures would be used to enhance the awareness of global climate change in conjunction with this alternative:

- 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 onsite waste materials;
- Provide incentives for contractors to use reusable water containers rather than plastic-bottled water;
- Provide incentives for contractors to hire locally; and
- Require reusable batteries for equipment that can use them.

In order to determine the significance of the impact of this alternative, a “carbon foot-print” was developed for the Proposed Action based on the project’s potential generation of GHGs (primarily carbon dioxide [CO_2]) from project activities. Project activities that would offset potential impacts were weighed

into the equation. This analysis indicates that the Proposed Action would produce approximately 1,914 pounds of CO_2 per day over the course of a 1.5-year construction period. The total GHG emissions resulting from the Proposed Action are estimated to be approximately 421 metric tons of CO_2.[10]

Based on these calculations, GHG emissions associated with the use of heavy equipment would be measurable over the course of the project under this alternative; however, GHG emissions and any effects on global climate change would not be cumulatively significant considering the amount of GHG emissions generated by this alternative in the context of current local air quality conditions. As a result, this alternative represents a much smaller action than that analyzed in the Trinity River Master EIR.

Fugitive dust resulting from project activities would occur during the dry summer and early fall months when PM levels may be elevated by wood stove use, brush burning, or wildland fires. This alternative would increase the PM levels to varying degrees, depending on the type and extent of construction activity. Dust control measures would be used to reduce project-related impacts. Once rehabilitation activities have been completed, project impacts on air quality from fugitive dust would cease. Additionally, project activities are expected to result in opportunities to increase the amount of native riparian and upland vegetation on exposed dirt surfaces, particularly with the removal and revegetation of dredge tailings deposits.

Diesel- and gasoline-powered equipment and vehicles used in project construction could also contribute to air pollution. Diesel particulate is an identified hazardous air pollutant and toxic air contaminant. As with PM, measures would be implemented to reduce project-related impacts from the use of diesel- and gasoline-powered equipment and vehicles. Once rehabilitation activities and transportation of tailings from the project area are completed, project impacts on air quality from fugitive dust and vehicle emissions would cease.

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow BLM's applicable regulations as well as California PRC 4428–4442 during dry periods to minimize the potential for the initiation and spread of fire from the work site. Compliance with these federal and state requirements would reduce the potential for emissions due to a wildland fire.

This alternative would include vegetation removal and temporary disturbance of soils. All of the vegetative material not used in the construction of SLJ and WP features would be chipped and incorporated into the floodplain or placed in upland areas to enhance growing conditions and reduce the potential for erosion. No removed vegetation would be burned. All areas not subject to inundation would be revegetated with native riparian and upland plant and tree species.

With the inclusion of CEQA mitigation measures (see Appendix E, EC AQ-1 [4.11-a-1a], [4.11-2a] and EC AQ-4), impacts under CEQA on air quality would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, air quality conditions would remain similar to existing conditions. Therefore, there would be no impacts to air quality as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

[10] The Road Construction Emissions Model Version 9.0.0 was used to calculate GHG emissions for combustible fuel (Sacramento Metropolitan Air Quality Management District 2019). The calculation is based on 88 days of construction and 24 months of hauling materials off site and includes diesel fuel combustion and loss of vegetation.

3.8 NOISE

3.8.1 Affected Environment

Sensitive receptors are specific geographic points, such as residences or recreational facilities, where people could be exposed to unacceptable levels of noise. Noise-sensitive land uses that have been identified in the project ESL include private residences and recreation use of the river corridor. Noise levels in the project vicinity are governed primarily by road noise along Sky Ranch Road and Dutch Creek Road (located west of the project ESL) from local residential traffic, occasional commercial traffic (e.g., logging trucks), and other miscellaneous sources (i.e., chain saws, lawn mowers, overhead aircraft, barking dogs, children at play). There are approximately 61 private parcels adjacent to or near (i.e., approximately 0.5 mile) the project ESL, 12 of which are directly adjacent to the ESL. In addition, recreational use of the river corridor by boaters (i.e., anglers and rafters) occurs throughout the year. Recreational users may be close to one or more activity areas during the construction period as they float through this reach, but the duration of their exposure to construction noise would depend on the type of recreational activity. For instance, a boat floating through the project ESL may take as long as an hour to get through the project reach.

In 2002, a community noise survey was conducted for Trinity County (Brown-Buntin 2002) as part of the update for the County General Plan – Noise Element. The nearest survey points to the project ESL were two sites about 1.5 miles away in Junction City: Junction City School and Winton Pass Road (Lot 25). The community noise survey results indicate that noise levels at these two noise-sensitive areas range from 52 to 60 dB Len [11]. These are low noise levels typical of small communities and rural areas. Maximum noise levels observed during the noise survey were generally caused by local automobile traffic and heavy trucks (Brown-Buntin 2002). Occasional aircraft overflights and construction activities were other sources of maximum noise levels. Background noise levels in the absence of these maximum noise-generating causes are largely attributable to distant traffic, wind, birds, and insects.

3.8.2 Environmental Consequences

Alternative 1

Under Alternative 1, noise from construction activities and off-site transportation of historic mining tailings would temporarily dominate the noise environment in and adjacent to activity areas for varying periods of time. Construction activities would generate maximum noise levels ranging from 65 to 84 dB Len 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 September; however, transportation of the tailings could continue year-round for up to 1.5 years.

Adjacent landowners would be notified by letter prior to project construction. The environmental commitments outlined in Table 2-2 and Appendix E (EC-NO-1 [4.14- 1a] and 2 [4.14-1b]) would ensure that temporary noise impacts would be minimized by noise-muffling devices so sensitive receptors would not be negatively affected for extended periods of time. Construction activities would be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday, while hauling of excavated materials from the project ESL would occur between 8 a.m. and 5 p.m., Monday through Friday. Construction activities would be prohibited on Sundays unless a variance is granted by both Trinity County and BLM managers.

Residences located near the site would be subjected to varying degrees of construction noise associated primarily with construction traffic entering and exiting the project ESL during the authorized work periods. It is not anticipated that ground vibration created by project activities would be detectable at any sensitive receptor location nor would the activities result in any structural damage. Recreational users in

[11] dB Ldn = The average equivalent sound level during a 24-hour day, obtained after the addition of 10 A-weighted decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

the general vicinity of the site could encounter increased ambient noise levels during construction activities. While such an increase in noise could be significant, its impact would be temporary and localized and would be minimized with the implementation of environmental commitments EC-NO-1 [4.14-1a] and 2 [4.14-1b] (see Appendix E).

If activities are proposed prior to the completion of the nesting season or if migratory birds are using habitat in the project ESL for nesting and rearing, preconstruction surveys would be performed to identify specific activity areas where noise-related impacts would be deferred until after the nesting season is complete or until a qualified biologist has determined the young have fledged their nest.. The increase in noise effects on wildlife (e.g., raptors, song birds, bat roosts, and ring-tailed cat dens) could be significant. These impacts would, however, be temporary and localized and would be minimized with the implementation of environmental commitments EC-VW-6 [4.14-1a] and 7 [4.14-1b] (see Appendix E).

With the inclusion of CEQA mitigation measures EC-NO-1 [4.14-1a], EC NO-2 [4.14-1b], EC-VW-6 [4.14-1a], and EC-VW-7 [4.14-1b] described in this section, impacts under CEQA related to noise would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, noise impacts to sensitive receptors would remain similar to existing conditions. Therefore, there would be no noise-related impacts as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.9 GEOMORPHOLOGY AND SOILS

3.9.1 Affected Environment

Flows in the Trinity River downstream from Trinity and Lewiston dams have been regulated since Trinity Dam was closed in 1960. Diversion of up to 90 percent of the Trinity River to the Sacramento River basin in the 1960s and 1970s led to substantial geomorphic changes in many locations along the Trinity River, with the predominant responses being channel narrowing and vegetative encroachment along the channel margins (USFWS and HVT 1999). Major influences on the river channel are flow regulation from Lewiston Dam and a wide array of historical large-scale mining sites. Historical mining impacts, large floods, flow regulation, and continued delta building have created the contemporary site geomorphology found today.

Millions of cubic yards of mining debris were discharged from hydraulic mining at the LaGrange Mine on Oregon Mountain as well as other upstream hydraulic mines over a 60-year period ending in the 1930s. Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively, and the dredge tailings deposits are evident on the right side of the river throughout the project ESL.

A 0.8-mile section of the ESL contains a dredger tailings field that occupies upwards of 75 percent of the valley bottom width and eliminates the river's ability to access most of the valley. The height of the tailings piles ranges from 25 to 35 feet above the river. Large pre-dam floods flattened portions of the tailings piles. Low areas between the tailings have created a large complex of perennial and ephemeral wetlands.

The river has low sinuosity, with river curvature driven largely by valley curvature near the Oregon Gulch confluence with the Trinity River. The river is not in direct contact with the valley walls except at the upstream site boundary (Sheridan Hole, RM 81.68) and a bedrock outcrop on river left at RM 80.9. Hydraulic mining caused significant aggradation, so the depth to bedrock is anticipated to be at least 10 feet or more.

Mineral resources in the project ESL consist primarily of gravel and cobble, which are considered suitable for use in river rehabilitation activities. Placer mining of alluvial gravel for gold using a variety of techniques over time has left tailings deposits of different types that are apparent throughout the project ESL; these deposits continue to influence the form and function of the Trinity River.

Other than for mining activities authorized under the Surface Mining and Reclamation Act (SMARA), information on private mining activities in Trinity County is limited. According to BLM and Trinity County records, there are currently no approved mining activities operating under the provisions of the 1872 mining law or a county SMARA permit within or near the project ESL.

There is one active sand and gravel mine, the Eagle Rock mine, operating under a county SMARA permit several miles from the project ESL. This mine is currently operating at the site of the historic La Grange Hydraulic Gold Mine upstream of Junction City. There is a second sand and gravel mine operating within the riverine area downstream of the project area, the Smith Pit mine (Trinity Sand and Gravel).

Seven soil map units (i.e., types) occur in the project ESL and are described in the Soil Survey of the Trinity County, California, Weaverville Area, and Soil Survey of the Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (Natural Resources Conservation Service 2018). All of the soils in the project ESL are considered well-drained. Hydric soils, which support wetland areas, have the potential to occur across the majority of the soils found within the project ESL, particularly along river and stream banks and where inundation is likely. An overview of each soil type is presented in Table 3-2.

Table 3-2. Soil Map Units in the Oregon Gulch ESL

Map Unit Name Taxonomy	Map Unit Reference Code	Percent of ESL	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Atter Extremely Gravelly Loamy Sand, 9 to 15 percent slopes	101	7	Somewhat excessively drained	None	No
Atter-Dumps, Dredge Tailings – Xerofluvents complex, 2 to 9 percent slopes Typic Xerorthents	102	61	Well-drained, somewhat excessively drained	More than 80 inches	No, except stream terraces, alluvial fans, and channels
Xerofluvents-Riverwash complex, 0 to 5 percent slopes Xerofluvents	217	14	Well-drained	More than 80 inches	Yes
Xerorthents-Rock Outcrop complex, 2 to 15 percent slopes	218	4	Well-drained	0 to 60 inches to lithic bedrock	No
Xeralfs-Xerorthents complex, 5 to 50 percent slopes Xeralfs, xerorthents	213	<1.0	Well-drained	10 to 60 inches to lithic bedrock	No, except stream terraces
Jafa Gravelly Loam, 2 to 9 percent slopes	102	<1.0	Well-drained	More than 80 inches	No
Water	220	8	N/A	N/A	N/A

3.9.2 Environmental Consequences Alternative 1

Under Alternative 1, most of the rehabilitation activities would take place in the active channel or on the existing floodplains and terrace features adjacent to the river. Three basic classes of geological materials would be used for constructing the design features. Clean gravel and cobble would be used to construct the submerged portions of U-2 and IC-2 when river turbidity is a potential problem during material placement, whereas pit-run gravel would be used as above-water fill in situations when turbidity is not a concern. Cobble and small boulders would be added to the pit-run gravel or clean gravel and cobble as needed to coarsen the grain size distribution of the fill placed in areas where greater resistance to erosion is required.

Construction of R-1, R-2, and R-3 would require removal of approximately 334,590 cubic yards of tailings and floodplain material and excavation of the IC-1 channel would add another 182,000 cubic yards for a total of 516,490 cubic yards. Up to about 52,860 cubic yards of the excavated material would be used as fill in construction of the U-2 constructed landslide feature, SLJ 1 and SLJ 2, and other design features (e.g., temporary river crossings), and about 143,000 cubic yards of excavated material would be placed in the U-1 area. The remaining 320,630 cubic yards of spoils would be transported off site for disposal at the Eagle Rock quarry, approximately 3.7 miles from the Oregon Gulch ESL (see Figure 2-1). Provided funding is available, the 143,000 cubic yards of U-1 material could alternatively be transported to the Eagle Rock quarry in order to preserve floodplain width. In this scenario, between 320,630 cubic yards and 500,000 cubic yards of tailings and excavated material would be relocated to the Eagle Rock quarry.

The excavation and fill of materials from alluvial and upland areas would expose these disturbed areas to erosion from wind and water to varying degrees, modifying their form and function. General ground disturbance from equipment access and use, vegetation removal, stockpiling of materials, and other related activities would also disturb soils on approximately 84 acres of the project ESL (see Table 2-1), increasing the potential for erosion due to decreased soil cohesion and armoring. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream, resulting in other impacts such as short-term increases in surficial and channel erosional processes; increases in turbidity levels (at varying distances) downstream; and changes to the type, volume, and character of deposition downstream. Increased wind and water erosion and subsequent downstream sediment transport in the Trinity River would occur if soils are exposed during the wet season (typically November through May) or during infrequent precipitation events such as summer thunderstorms.

Soil compaction from heavy equipment can also increase runoff and subsequently increase the potential for erosion in disturbed areas. Disturbance areas would be minimized through the establishment of activity areas and clear markers (e.g., fencing, flagging) to designate the work limits in accordance with environmental commitment EC-GS-1[4.3-2a] (see Table 2-2 and Appendix E). Erosion control measures would be implemented during the rehabilitation activities to protect exposed soils and minimize erosion, in accordance with EC-GS-2 [4.3-2b]. Indirect effects on water quality of the Trinity River are discussed in section 3.11, Water Quality.

Surface and subsurface geology and soil conditions in the activity areas were evaluated as part of the design process, and the types of alluvial material (e.g., cobble, gravel, fines) available for the rehabilitation activities were characterized to determine how much material could be reused onsite. Areas where fill placement would occur would initially be exposed to water erosion from the river, particularly during high flow and flood events, but the newly created features are expected to stabilize after grading efforts are completed, initial erosional events occur, and vegetation is reestablished in disturbed areas. Sediment would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine process. The overall effects on river geomorphology would benefit aquatic resources and result in more natural alluvial processes, including an increase in the size, amount, and complexity of alluvial features that support diverse aquatic habitat, as discussed in section 3.13, Fishery Resources.

Some of the cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits in the project ESL would be used onsite to enhance the in-channel and riverine activity areas as part of the rehabilitation activities. The processing and reuse of alluvial material excavated from in-channel and floodplain activity areas would minimize the need to obtain these materials from adjacent tailings deposits and other off-site sources.

Implementation of environmental commitments specific to erosion would minimize the potential for soil erosion and adverse effects on the river and its floodplain during the rehabilitation activities. Rehabilitation activities are intended to modify the geomorphology of the river in the project ESL to benefit aquatic resources and fluvial processes.

With the inclusion of CEQA mitigation measures EC-GS-1[4.3-2a] and EC-GS-2 [4.3-2b] described in this section, impacts under CEQA related to geomorphology and soils considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, impacts to geomorphic processes and soils resources would remain similar to existing conditions. Therefore, there would be no impacts to these processes or resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.10 HYDROLOGY AND FLOODING

3.10.1 Affected Environment

The Trinity River Division of the Central Valley Project (TRD) regulates flow in the 40-mile reach of the river downstream of Lewiston Dam in accordance with the 2000 ROD for the Trinity River Mainstem Fishery Restoration EIS. Since 2005, the flow schedule has been adjusted annually based on water year type and ranges from 369,000 acre-feet in critically dry years to 815,000 acre-feet in extremely wet years. The minimum baseflow is approximately 450 cfs. Median flows experienced in various water year types range from 4,800 cfs in dry years to 16,850 cfs in extremely wet years, as measured at the Junction City stream gage (Hoopa Valley Tribe Design Group 2019). The 100-year flood is defined as 58,810 cfs.

Streamflow in the project ESL exhibits seasonal patterns that reflect a combination of flow releases from Lewiston Dam and natural tributary accretion. During the late summer and fall, Lewiston Dam releases to the Trinity River range from 300 cfs to 450 cfs; contributions from tributaries upstream of the project ESL are minor. Reclamation has periodically increased releases in late summer–early fall for short periods of time to respond to water quality concerns downstream in the Klamath River. Between November and May, flow releases from Lewiston Dam are augmented by increased tributary flows and surface runoff. The tributaries can also cause large floods during intense winter storms, leading to high peak flows in the project ESL. In May, peak flows originating from dam releases are typically followed by receding flows in the summer.

The Trinity River Flood Insurance Study (FIS) was updated for Trinity County in 2014 using a hydraulic analysis conducted by the California Department of Water Resources (DWR), Northern Region Office. This analysis consisted of creating and calibrating the Trinity River FIS hydraulic model, performing the floodway analysis, and mapping the 100- and 500-year floodplains. The FIS modeled the reach of the Trinity River from just downstream of the North Fork Trinity River to Trinity Dam Boulevard (RM 72.43 to 110.96). It also included development of approximate hydraulic models for seven tributaries to the Trinity River to aid in improving flood zone A mapping. This analysis used the best available topographic and flow data, provided in part by the TRRP.

The river's floodway was determined from a floodplain encroachment analysis performed by DWR for the TRRP using methods consistent with the FEMA requirements. The floodway is defined as the channel of a river or watercourse and the adjacent lands that must be reserved in order to discharge the base flood[12] without cumulatively increasing the water-surface elevation more than 1 foot.

With the exception of some portions of staging and upland activity areas, most of the project ESL is within the 100-year floodplain, as defined in the 2014 FIS, and is subject to Section 29.4 of Trinity County's zoning ordinance (Flood Hazard Zoning District or Flood Hazard Overlay Zone). This section of the County's ordinance requires a permit for development in the floodplain; provisions of this section require that "encroachments shall not result in any increase in [the base] flood elevation during the occurrence of the base flood discharge."

3.10.2 Environmental Consequences

Alternative 1

Under Alternative 1, the elevation and extent of the Trinity River floodplain would be modified through the activities described in Chapter 2. This alternative was developed to ensure that none of the activities within the limits of the 100-year floodplain would be in conflict with the provisions of Section 29.4 of Trinity County's zoning ordinance.

No structures or facilities are located in activity areas below the FEMA base flood elevation (BFE). A key element in the selection of activity areas and subsequent engineering designs for activities in these areas was to ensure that encroachments into the floodway would not result in any increase in the BFE near structures during the occurrence of the base flood discharge within the project ESL. The hydraulic analysis conducted by McBain Associates and the Hoopa Valley Tribe used the FEMA-approved model developed for the 2014 FIS. This 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 near structures on private property (Yurok Tribe 2020). This alternative would not include activities intended to increase the BFE in the project ESL. Activities intended to modify the bed and banks of the Trinity River could have ancillary impacts to the bed and banks downstream.

This alternative was developed to be self-perpetuating and to dynamically evolve in response to changes in the flow and sediment regime. Until riparian vegetation grows on the new floodplain features, a large flood could induce rapid meander migration in the downstream direction, including the Oregon Gulch site. However, SLJ and WP features combined with revegetation efforts are expected to limit the migration extent of the meander complex. A 100-year return interval flow could scour some of the riffle features to varying degrees.

The displacement of channel and floodplain materials would have only a minimal potential to change the groundwater hydraulics in the project ESL. 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) indicate that no long-term impacts on water table elevations would occur.

While the fundamental objective of the activities associated with this alternative is to reestablish the alluvial features of the river, isolated instances of bank erosion could result in the loss of riverbank, sedimentation, deposition of sediment on alluvial features, and loss of riparian vegetation. The environmental commitments outlined in Table 2-2 and Appendix E are an integral component of this

[12] Flood having a 1 percent chance of being equaled or exceeded in any given year, also referred to as the 100-year flood.

alternative. As a whole, this alternative was developed to ensure that no people or structures would be exposed to a risk of injury, death, or loss involving flooding and/or erosional processes.

The overall design of this alternative was developed to ensure that the hydrologic function and potential for flooding meet the project objectives, and no mitigation is required. Impacts under CEQA related to hydrology and flooding considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, impacts to hydrology and flooding would remain similar to existing conditions. Therefore, there would be no impacts to hydrology or flood occurrence as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.11 WATER QUALITY

3.11.1 Affected Environment

The release of water from Lewiston Dam influences water quality in the Trinity River, primarily in the 40-mile reach downstream of the dam. These influences are particularly important with respect to turbidity, suspended sediments, and temperature.

The activities described in Chapter 2 of this EA/IS are subject to compliance with the Water Quality Control Plan for the North Coast Region (Basin Plan; Regional Water Board 2011). The beneficial uses for the Trinity River defined in the Basin Plan are listed in Table 4.5-1 of the 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 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. Section 4.5-1 of the Master EIR also provides a comprehensive discussion of water quality parameters that influence water quality in the 40-mile reach of the Trinity River below Lewiston Dam.

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 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 (TMDL; EPA 2001) 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 streamflow downstream of the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (EPA 2001). The Trinity River is typically very clear, with natural background turbidity levels in the range of 0 to 1 NTU during low-flow conditions (300 to 450 cfs).

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, timing of migration, spawning and rearing, and the availability of food. Since the construction of the TRD, discharge from Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the water year type and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

A key objective of the TRRP's flow management is to improve the thermal regimes for all anadromous salmonid life stages that use the Trinity River. The TRRP has been using flow management practices to meet specific temperature management targets, and temperature monitoring data have been collected as

part of the Adaptive Environmental Assessment and Management process since 2002. The project ESL is located between two water temperature monitoring sites, Douglas City and Trinity River above North Fork Trinity.

Water temperatures in the Trinity River through the project ESL are primarily influenced by flows, topography, and aspect. Reservoir releases from Trinity Dam have flipped the natural temperature regime, making the river warmer in the winter and colder in the summer than would have occurred without the dam. Water temperatures, dissolved oxygen, mercury levels, and other water quality parameters were recorded in 2017 in the river in the ESL and the adjacent standing ponds (Yurok Tribe 2020). The current temperature regime lacks seasonal variability exhibited by undammed streams in the region. Dissolved oxygen varies greatly from point to point, but was generally found to be good in the ESL. Mercury concentrations are well below the threshold for detrimental impacts set by the State of California and by the EPA.

3.11.2 Environmental Consequences

Alternative 1

In the following discussion, the environmental consequences of Alternative 1 on water quality and the associated beneficial uses of the Trinity River focus on three water quality parameters: turbidity, sediment, and temperature.

Turbidity

On June 8, 2020, the Regional Water Board issued a General Water Quality Certification (Order R1-2020-0025; North Coast Regional Water Quality Control Board 2020) to the TRRP under the auspices of Reclamation. This order implements portions of the Trinity River TMDL and provides an allowable zone of turbidity dilution (protective of sensitive aquatic life), within which turbidity levels shall not exceed 20 NTUs or 20 percent above naturally occurring background levels, whichever is greater. During in-river construction activities, the TRRP would monitor turbidity levels within 50 feet upstream of project activities (to serve as the natural background level) and 500 feet downstream of the in-river construction activities (point of compliance) that could increase turbidity. If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance shall not exceed 20 percent above the naturally occurring background level.

Due to the extremely low background turbidity during low-flow conditions, reducing turbidity levels to within 20 percent above background is generally not feasible, even with the environmental commitments listed in Table 2-2 and Appendix E. Turbidity levels immediately downstream of the most carefully planned and implemented in-channel restoration activities would 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 because their duration is short and fish are able to move away from the activity area, and the long-term overall conditions would meet the turbidity requirements. Monitoring turbidity increases during implementation of previous TRRP projects has shown that periods of increased turbidity are brief (generally less than 24 hours) and that beneficial uses continue to be protected. In addition, the quantity of fine sediment introduced to the river during activities at low flows is typically small and is restricted with respect to timing and location; furthermore, not all activity areas experience disturbance at the same time. Three temporary crossings of the river at the Oregon Gulch site (segments of A-6, A-7, and A-8) would provide access for in-channel and riverine work areas.

Over the years, the TRRP has increasingly conducted in-channel work in order to create immediate aquatic habitat and to create conditions where river flows develop and maintain functioning river

attributes (e.g., backwaters and alternating point bars). Through time, various effective turbidity control measures for construction have developed. These include:

- Structural containment – Use structures such as earth barriers, K-rail containment dams, bladder dams, and silt curtains to isolate turbid water from the active channel. These structures typically remain in place until the riverine features are fully excavated and graded.
- Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed and in some cases washed to help maintain low turbidity levels associated with placement of gravel and cobbles in or adjacent to the channel.
- Pace of construction – Controlling the pace of in-channel excavation and placement of alluvial material ensures that sediment input into the water column is consistent with permit requirements. This method requires direct field observations and real-time turbidity data obtained by onsite construction monitoring personnel.
- Flushing – Within structurally contained areas, turbid water is flushed by allowing flow into the work area and regulating the outflow as a function of measured turbidity levels. Small weirs are used to adjust inflow and outflow rates to ensure that permit requirements are met.
- Channel bottom cleaning – This method entails removal of silt- and clay-sized sediment from the channel bottom, typically by pumping or hand excavation. This method requires effluent to be pumped to containment ponds in upland areas and subsequently incorporated into site rehabilitation efforts.

During in-channel construction activities, increases in turbidity levels could occur because of the excavation of alluvial material. Connection of isolated and newly constructed side channels (e.g., during the first flush of flowing water) would result in short-term increases in turbidity levels as material is removed from and/or redistributed downstream. Fine sediments may be suspended in the river for several hours following construction activities; however, the project would be compliant with the conditions of the Program's General Water Quality Certification and is not expected to have a negative impact on beneficial uses.

TRRP monitoring data also indicate that turbidity levels downstream of the rehabilitation sites may be increased by overland flow during the initial high-flow events that occur following completion of construction activities. During springtime high-flow releases from Lewiston Dam (e.g., clear water released from the dam during channel maintenance flows), turbidity levels at monitoring locations 500 feet or more downstream of recently completed channel rehabilitation sites may be more than 20 percent greater than background levels. However, when the high flows are caused by natural stormwater 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 rehabilitation activities.

The incorporation of the environmental commitments listed in Table 2-2 and Appendix E (EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e, 4.5-2a-2c] and EC WQ-5 [4.5-3a -3c]) in conjunction with the design elements and construction criteria described in Appendix D (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit turbidity in the Trinity River. Additionally, river's edge and in-channel construction activities would be staged to minimize potential turbidity effects.

Suspended Sediment

The effects of this alternative on water quality associated with in-channel activities would change the location and nature of sediment in and adjacent to the low-flow channel. During natural high-flow events, the relative addition of fine sediment from recently completed channel rehabilitation projects is minimal

compared to the sediment load already being transported by the river. Furthermore, in the Trinity River watershed where wildfire has occurred over the last several years (e.g., the Oregon Fire in 2014, Helena Fire in 2017, Carr Fire in 2018), it is expected that water quality in the restoration reach would be strongly influenced by run-off from burned areas during storm events. In these run-off events, the contribution of fine sediment associated with TRRP projects is expected to be relatively minimal compared to the loading from burned watersheds.

The extent of downstream sedimentation would be a function of the size and mobility of the substrate. For example, fine-grained sediments such as silts and clays can be carried several thousand feet downstream of the construction zone while larger-sized sediments such as coarse sands and gravels tend to drop out of the water column within several feet of the construction zone. Collectively, the activities included in this alternative 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.

The activities described in Chapter 2 and Appendix D for this alternative would temporarily increase total suspended solids in the Trinity River. The incorporation of the environmental commitments listed in Table 2-2 and Appendix E (EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e, 4.5-2a-2c] and EC WQ-5 [4.5-3a -3c]) in conjunction with the design elements and construction criteria described in Appendix D (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit suspended sediments in the Trinity River.

Temperature

This alternative is intended to reconnect the existing floodplains with the channel, which would result in shallow depths and slow velocities across a wider range of stream flows than those currently being provided. Other activities incorporated into this alternative would increase the complexity of the channel to increase habitat for all life stages of salmonids. This alternative would include clearing and grading a number of activity areas, some of which contain riparian vegetation. The existing riparian vegetation has little influence on water temperature through this reach, but it does provide shaded riparian area habitat for aquatic organisms at isolated locations along the channel margin. Revegetation efforts associated with these activities would increase functional riparian vegetation, which in turn would increase shade and improve habitat for juvenile salmonids along the margins of these features under a wide range of flow conditions, including those that may occur during late-summer releases when air temperatures are high.

With the inclusion of CEQA mitigation measures EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e, 4.5-2a-2c] and EC WQ-5 [4.5-3a-3c], impacts under CEQA related to water quality considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

As described in Chapter 2 and Appendix E, design measures would be incorporated into the construction contract to minimize the potential for hazardous materials (e.g., hydraulic fluid) from leaking or otherwise being discharged into the river at crossings or other locations where equipment is working in the water. These commitments and measures would be adequate to protect the beneficial uses of the Trinity River.

Alternative 2

Under Alternative 2, impacts to water quality and associated beneficial uses would remain similar to existing conditions. Therefore, there would be no impacts on water quality as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.12 FISHERY RESOURCES

This section describes the fishery resources and aquatic habitats that are known to occur in the project ESL and evaluates the impacts of the alternatives on these resources. The discussion of fisheries resources is based on detailed design reports prepared for the Oregon Gulch site by the design team. Information

from a focused literature review, informal consultation with resource agencies, and observations made during site visits was also incorporated into this section. Additional information on fishery resources is discussed in Section 4.6 and Appendix G of the Master EIR. The Magnuson-Stevens Fishery Conservation and Management Act and Essential Fish Habitat are also described in Section 4.6 of the Master EIR.

3.12.1 Affected Environment

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 freshwater habitat requirements of these and other species and their distinct spawning populations are described in Appendix G of the 2009 Master EIR.

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 River 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 below Burnt Ranch Falls. Currently, brown trout are largely limited to the upper portions of the river below Lewiston Dam, although some brown trout exhibit anadromous characteristics.

Federally listed fish species with the potential to occur in the project ESL include:

- Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) of coho salmon;
- Klamath Mountain Province steelhead ESU;
- Upper Klamath-Trinity Rivers ESU Chinook salmon; and
- Pacific lamprey.

In 2014 and 2020, freshwater mussels were identified at a number of locations in the low-flow channel within the project ESL (BLM 2020). In 2015, a number of ammocoete rearing areas were identified throughout the project reach.

3.12.2 Environmental Consequences

Alternative 1

A primary objective of Alternative 1 is to increase spawning and rearing habitat for anadromous salmonids in a manner that benefits coho salmon and other special-status fish species.

In support of the TRRP, Reclamation previously developed a hydraulic model that has been used by the design teams to characterize existing and potential habitat within the project ESL for anadromous salmonid fry and presmolt life stages. For previous EA/IS analyses, weighted useable area (WUA) was the metric used to characterize habitat under existing conditions based on three attributes: depth, velocity, and cover. For the Oregon Gulch project, the TRRP's Fish Work Group recently recommended that juvenile salmonid physical habitat be estimated using a fish capacity equation, which would be used in all

TRRP work going forward. The Oregon Gulch project marks one of the first occasions of the equation being applied to design habitat evaluations by the Trinity River Design Team, demonstrating that through adaptive management, the best new science is being used in the design of project features.

The fish capacity equation is relatively new. It uses a robust dataset designed to feed critical fish density inputs for estimating fish production on a systemic scale in a Stream Salmonid Simulator model developed specifically for the Trinity River (Perry et al. 2018). The fish capacity metric estimates the upper bounds of individual fry or presmolt abundance that could be present in a specified area over relatively short periods of time ranging from hours to an entire day (Som et al. 2017). The capacity metric that resulted from the custom-designed data collection and extensive model-fitting process weights the effects of depth, velocity, and distance to cover differently than traditional WUA metrics (see Yurok Tribe 2020).

Fry and juvenile rearing habitat capacity was estimated for the Oregon Gulch site using outputs from the project design hydraulic model results (Yurok Tribe 2020). Estimating rearing habitat through fish capacity relies on depth, velocity, and distance to cover outputs. The capacity metric also accounts for variation in local fish abundances beyond these three physical variables. Table 3-3 presents a summary of the fish capacity predicted for the ESL.

Capacity increases for the project reflect the scale of the proposed valley rehabilitation. As detailed in the hydrology section, flows at Oregon Gulch during the critical rearing period (January–April) typically range from 600–1,800 cfs. Capacity increases range from 900–1,041 percent for fry and 496–673 percent for presmolts. Increases of this magnitude (10 fold) have never before been demonstrated for a TRRP rehabilitation design. The valley restoration approach and low-flow channel specifically target increasing habitat at discharges that are most important for juvenile fish during the critical rearing period. An estimated increase of 900 percent in fry rearing capacity at 600 cfs supports this approach. A drop in the estimated gains in fry capacity is evident between 800 and 4,800 cfs (1,040–623 percent). By design, the floodplain surface is completely inundated at 800 cfs. At higher flows, velocities begin to increase across the floodplain, which explains the smaller, albeit still very large, increases. Presmolt capacity continues to increase throughout the flow range as these larger fish tolerate higher velocities.

Differences in the way the capacity metric relates the physical variables to habitat quality lead to different patterns in the traditionally considered flow-to-habitat graphs that were commonly displayed for WUA calculations on the Trinity River. It is important to note that the actual pattern of changes in capacity as a function of discharge would be driven by the physical characteristics of the river section, but one of the most notable differences in the patterns generated by the capacity metric is the absence of a marked decrease in habitat quality at intermediate discharges (commonly referred to as the “habitat dip”). Reasons for this different flow-to-habitat pattern include the very robust data set used to generate the model, the fact that the capacity model accounts for imperfect detection, and the variation in fish abundance beyond the variables of depth, velocity, and biotic and abiotic cover.

Activities related to implementation of this alternative include the following environmental commitments, as outlined in Table 2-2, to reduce impacts to fishery resources: EC FR-1 [4.6-1a, 1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d]. This alternative 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 in the project ESL and increase the potential for sediment delivery to the Trinity River. As discussed in section 3.12, Water Quality, this alternative would result in some project-related effects on erosional processes and changes in the sediment regime within the project ESL and, to a limited extent, downstream. The excavation of alluvial materials within the channel and associated floodplain of the Trinity River would result in changes to the amount and character of sediment that may be mobilized post-construction.

Table 3-3. Estimated Fish Capacity (Total Number of Fish) for the Oregon Gulch Rehabilitation Site at Existing and 90 Percent Design Conditions

Discharge	Existing Fry	Existing Presmolt	Design Fry	Design Presmolt	Percent Increase Fry	Percent Increase Presmolt
350	2,066,426	542,251	4,415,513	1,052,714	114	94
450	1,898,467	528,892	4,740,872	1,159,337	150	119
600	1,696,684	510,465	16,959,808	3,041,313	900	496
800	1,542,588	498,925	17,590,396	3,327,916	1,040	567
1,200	1,397,962	490,081	15,350,484	3,384,612	998	591
1,800	1,337,247	484,635	14,054,960	3,744,610	951	673
2,500	1,387,653	501,426	13,404,804	4,219,898	866	742
3,500	1,513,884	555,522	13,174,571	4,887,795	770	780
4,000	1,611,942	585,747	12,990,963	5,236,235	706	794
4,800	1,791,810	633,893	12,951,779	5,825,820	623	819

Exposed soils in the upland and staging areas are susceptible to mobilization from rainfall during early-season runoff events. In-river excavation is planned as part of Alternative 1, and it is expected that excavation and operation of heavy equipment in the active channel would re-suspend silt and sand, resulting in localized and temporary increases in suspended streambed sediments and turbidity. Any juvenile salmon rearing in the area could be temporarily displaced or their social behavior could be temporarily disrupted by turbidity created during in-channel construction.

Erosion and deposition of fine sediments associated with implementation of this alternative are expected to be localized and temporary. Some fine-textured sediment may settle near or on spawning habitat located downstream of riverine activity areas, but this sediment is not expected to impair redd excavation or spawning. Excavation, grading, and the addition of coarse sediment to the channel would occur only during low-flow conditions between July 15 and September 15, which is prior to the spawning period. In-river work, including construction of temporary crossings, may temporarily displace adult salmonids using holding habitat within the project ESL to other holding habitat either upstream or downstream of the project reach due to transient turbidity and short-duration sediment plumes. Juvenile salmonids using this reach during low-flow conditions could also be temporarily displaced or their social behavior could be temporarily disrupted due to increases in turbidity or suspended sediment. Behavioral disruption, even temporarily, could result in some increased vulnerability of salmonids to competitive interactions or predation.

TRRP has completed formal consultation with NMFS on the effects of TRRP sediment management and channel rehabilitation and monitoring, as well as the potential effect of floodplain restoration work throughout the Trinity River watershed. The NMFS' August 2020 Trinity River Restoration Program Biological Opinion (NMFS 2020) describes the implementation strategies and conservation measures that would be employed during the proposed construction at the project site. Implementation strategies and conservation measures described in the Biological Opinion would be employed.

Adult Pacific lampreys migrate upstream from spring through early summer 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. In addition to ammocoetes occupying alluvial substrate, freshwater mussel populations occur at locations throughout the project ESL. Mussel beds observed within the boundaries of in-channel activity areas would be flagged for avoidance and, to the extent feasible, individuals would be relocated to nearby appropriate habitat that would not be disturbed (see EC-VW-10). Some mussels and lampreys may inadvertently be physically displaced during construction. This effect would be minimal for both species due to the large populations known to occur at other upstream and downstream Trinity River locations.

The environmental commitments incorporated into this alternative would be implemented during the construction activities described in Chapter 2 and Appendix D. In addition to the typical practice of refueling construction equipment in contractor use activity areas, this alternative also includes activities that would result in mechanized equipment (e.g., trucks, excavators) crossing and/or operating in 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. Without rapid containment and clean up, toxic substances could be released into the water bodies in the ESL, depending on the location of the spill. Oils, fuels, and other contaminants could have short-term effects on the various life stages of salmonids and other anadromous fish that are using habitat in close proximity to construction activities; however, this effect is not anticipated to have negative long-term effects on individual organisms or populations.

Coho salmon and other special-status aquatic species occur in the Trinity River, and suitable salmonid rearing habitat in the project ESL is used year-round. Adult coho and other salmonids migrate through the project ESL 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 and other salmonids could occur during in-river construction and construction of the low-flow channel crossings. These in-water work activities would be conducted only during late-summer low-flow conditions (July 15 to October 15) when the fewest number of juvenile salmonids are known to occur in the project reach, thus minimizing the potential for direct mortality to rearing coho and other salmonids.

NMFS expects that all displaced juvenile fish, including coho salmon, would find suitable habitat in river reaches upstream or downstream of the project reach since juvenile rearing habitat in the mainstem Trinity River is likely under-saturated during summer and fall months (NMFS 2006). The construction period identified above would 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 during rapidly receding flood-flow periods in the winter and early spring when fry are emerging. Although stranding of fry under such receding flood conditions occurs naturally, the constructed features could increase the potential for stranding. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk.

These increases in habitat for extremely young fish can be critical for their survival. Alternative 1 includes design elements to protect adult spawning and holding habitat, particularly at the sensitive features shown on Figure D-1 in Appendix D. These beneficial effects would also apply to varying degrees to other aquatic organisms that use habitat in this reach.

With the inclusion of CEQA mitigation measures EC FR-1 [4.6-1a, 1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d] described in this section, adverse impacts under CEQA related to fisheries would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under the No Action Alternative, there would be no effects on spawning and rearing habitat or fish capacity for fry and presmolt salmonids 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 since 2005. These projects continue to affect the Trinity River with regards to flows, sediment, channel morphology, and riparian vegetation and the associated influence on habitat for aquatic organisms. There would be no improvement to anadromous fish habitat as a result of this alternative.

Under this alternative, the project would not be constructed. Consequently, there would be no risk of accidental spills of hazardous material and construction-related mortality to rearing salmonids would not occur nor would there be a loss of spawning, rearing, and holding habitat. Impacts to fishery resources would remain similar to existing conditions. Therefore, there would be no impacts on fishery resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.13 VEGETATION, WILDLIFE, AND WETLANDS

3.13.1 Affected Environment

The project ESL supports a diversity of plant communities and wildlife habitats typical of the Trinity River corridor, including a number of non-native and invasive plant species associated with historic mining and a managed flow regime. No ESA-listed or special-status plant species were identified during botanical surveys in the project ESL. Wildlife habitats described in this section are based on the California Wildlife Habitat Relationships (CWHR) system. These wildlife habitats are summarized in Table 3-4 and illustrated on Figure 3-1.

Vegetation and Special Status Plants

The dominant habitat types in the project ESL include montane riparian, (European invasive) annual grassland, and barren (see Table 3-4). These habitat types make up more than 61 percent of the habitats present in the project ESL. Douglas-fir, riverine, ponderosa pine, montane-hardwood-conifer, montane hardwood, blue oak-foothill pine, urban, mixed chaparral, freshwater emergent, and valley foothill riparian are the habitats that make up the remaining portions of the project ESL. Dominant overstory plant species in these 12 habitats include gray pine (*Pinus sabiniana*), canyon live oak (*Quercus chrysolepis*), Oregon white oak (*Q. garryana*), ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*), with occasional Pacific madrone (*Arbutus menziesii*) and incense cedar (*Calocedrus decurrens*). Understory vegetation includes white leaf manzanita (*Arctostaphylos viscida*), greenleaf manzanita (*A. patula*), birchleaf mountain mahogany (*Cercocarpus betuloides*), Himalayan blackberry (*Rubus armeniacus*), poison-oak (*Toxicodendron diversilobum*), rattail sixweeks grass (*Festuca myuros*), soft brome (*Bromus hordeaceus*), redstem filaree (*Erodium cicutarium*), black mustard (*Brassica nigra*), miniature lupine (*Lupinus bicolor*), and English plantain (*Plantago lanceolata*). Himalayan blackberry (*Rubus armeniacus)* is pervasive along the left bank in the area where U-2 is proposed for construction. Upland native species include lupine (*lupinus bicolor*) and blue wildrye (*elymus glaucus*); and non-native grasses such as Maltese starthistle (*Centaurea melitensis*) and yellow starthistle (*Centaurea solstitialis*). These non-native species frequently occupy open disturbed areas, in this case associated with alluvial terraces and dredge tailings.

Table 3-4. Plant Communities and Other Habitats in the Oregon Gulch ESL

Wildlife Habitat Type	Estimated Acres in Project ESL
Annual Grassland	19.3
Barren	18.7
Blue Oak-Foothill Pine	3.5
Douglas-fir	0.2
Freshwater Emergent Wetland	1.0
Lacustrine	2.0
Mixed Chaparral	0.7
Montane Hardwood	1.9
Montane Hardwood-Conifer	1.5
Montane Riparian	37.1
Ponderosa Pine	9.0
Riverine	9.6
Urban*	1.4
Valley Foothill Riparian	16.3
Other/Not Classified	11.8
Total	**134.1**

*Urban includes portions of the access road.

The 40-mile reach of the Trinity River downstream of Lewiston Dam may support several special-status plant species, including species listed under ESA and CESA; BLM Sensitive Species; and species considered rare, threatened, or endangered in California based on the Rare Plant Ranks (see Table 4.7-1 in the Master EIR for a complete list of species and their status). Botanical surveys were conducted at the Oregon Gulch site in March, May, and June 2018 by Stantec Consulting Services, Inc.; no special-status plant species (including plants listed on the BLM Sensitive Species list) were identified. The boundary of the project ESL was revised in 2020, and additional botanical surveys were conducted in May and September 2020 by Ironwood Consulting biologists in the areas not covered by the previous surveys. No special-status plant species were identified during the 2020 surveys. The aquatic invasive organism didymo *(Didymosphenia geminata)* was documented in the vicinity of the Oregon Gulch site in 2018[13] (Forest Service 2018). There is presently professional debate concerning whether or not didymo is a native species, but it is commonly located in the Trinity River restoration reach (Eric Peterson, TRRP data steward/biologist, personal communication 2020).

Waters and Wetlands

Table 3-5 and Figure 3-2 summarize the wetlands and non-wetland waters of the United States that occur within the project boundary.

[13] Some scientists believe that didymo is a non-native and invasive diatom that is easily transferred between watersheds, most commonly through recreational equipment such as boats, waders, and fishing gear.

Table 3-5. Summary of Waters of the United States in the Oregon Gulch ESL

Waters of the United States	Total Acreage	Total Linear Feet [a]	Cowardin Type [b]
Riparian Wetland	12.3	N/A	PFO, PSS
Emergent Wetland	1.0	N/A	PEM
Open Waters: Lacustrine	2.0	N/A	L2UB1
Open Waters: Perennial Stream	9.8	4,620	R3UB, R3US
Open Waters: Seasonal Stream	<0.1	150	R4UB, R4US
Total Waters of the United States	**25.1**	**4,770**	

[a.] Water body linear feet is measured as the length of the water body at its longest extent.
[b.] The Cowardin classification system is a system for classifying wetlands devised by Lewis M. Cowardin et al. in 1979 for the USFWS. PFO = palustrine forested wetland; PSS = palustrine scrub-shrub wetland; PEM = palustrine emergent wetland; L2UB1 = lacustrine littoral unconsolidated bottom – cobble/gravel water body; R3UB = riverine upper perennial unconsolidated bottom; R3US = riverine upper perennial unconsolidated shore; R4UB = riverine upper intermittent unconsolidated bottom; R4US = riverine upper intermittent unconsolidated shore.

The Trinity River is the primary drainage feature in the project ESL. It is considered a water of the United States and a navigable water that is subject to the jurisdiction of the USACE. The main channel of the Trinity River, classified as perennial stream by the USACE, totals 9.6 acres (4,018 linear feet) in the ESL.

Two perennial streams, Mill Creek and Oregon Gulch, are located within the ESL (R2 and R3 on Figure 3-2, respectively). Oregon Gulch is on the north side of the Trinity River and crosses into the ESL through a culvert under Sky Ranch Road. This stream conveys water from Oregon Gulch and upland areas near the outer limits of the project ESL into riparian wetland areas adjacent to the Trinity River. Oregon Gulch would be considered a water of the United States because of its association with the Trinity River. The segment of Oregon Gulch in the ESL totals approximately 124 linear feet and ranges between 2 and 10 feet wide at the ordinary high-water mark; it occupies approximately 0.1 acre of the ESL.

Mill Creek is on the left bank (west side) of the Trinity River and crosses into the ESL where the proposed U-2d activity area would be. This stream conveys water from the Mill Creek drainage and upland areas near the outer limits of the project ESL into riparian wetland areas adjacent to the Trinity River. It would be considered a water of the United States because of its association with the Trinity River. The segment of Mill Creek in the ESL is perennial and becomes seasonal as it flows toward the Trinity River (SR1 on Figure 3-2). The segment of Mill Creek within the project ESL totals approximately 623 linear feet, 150 of which are seasonal and do not convey water during the dryer parts of the year. Mill Creek along the perennial segment ranges between 2 and 10 feet wide at the ordinary high-water mark; it occupies approximately 0.2 acre of the ESL. The seasonal segment of Mill Creek is less than 0.1 acre in size.

A total of 34 riparian wetlands totaling approximately 12.3 acres were delineated in the project ESL. These wetlands are located along the main and side channels of the Trinity River; they contain a dominance of woody riparian and herbaceous species, such as willows (*Salix* spp.), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), Himalayan blackberry (*Rubus armeniacus)*, reed canary grass (*Phalaris arundinacea*), and mugwort (*Artemesia douglasiana*).

Seven emergent wetlands totaling approximately 1 acre are present in the project ESL as shallow depressions and alongside ponds and perennial streams. Dominant vegetation in the seasonal wetlands includes pale spikerush (*Eleocharis macrostachya*), annual rabbitsfoot grass (*Polypogon monspeliensis*), and annual hairgrass (*Deschampsia danthonioides*).

Figure 3-1. Habitat Types Occurring in the Oregon Gulch ESL

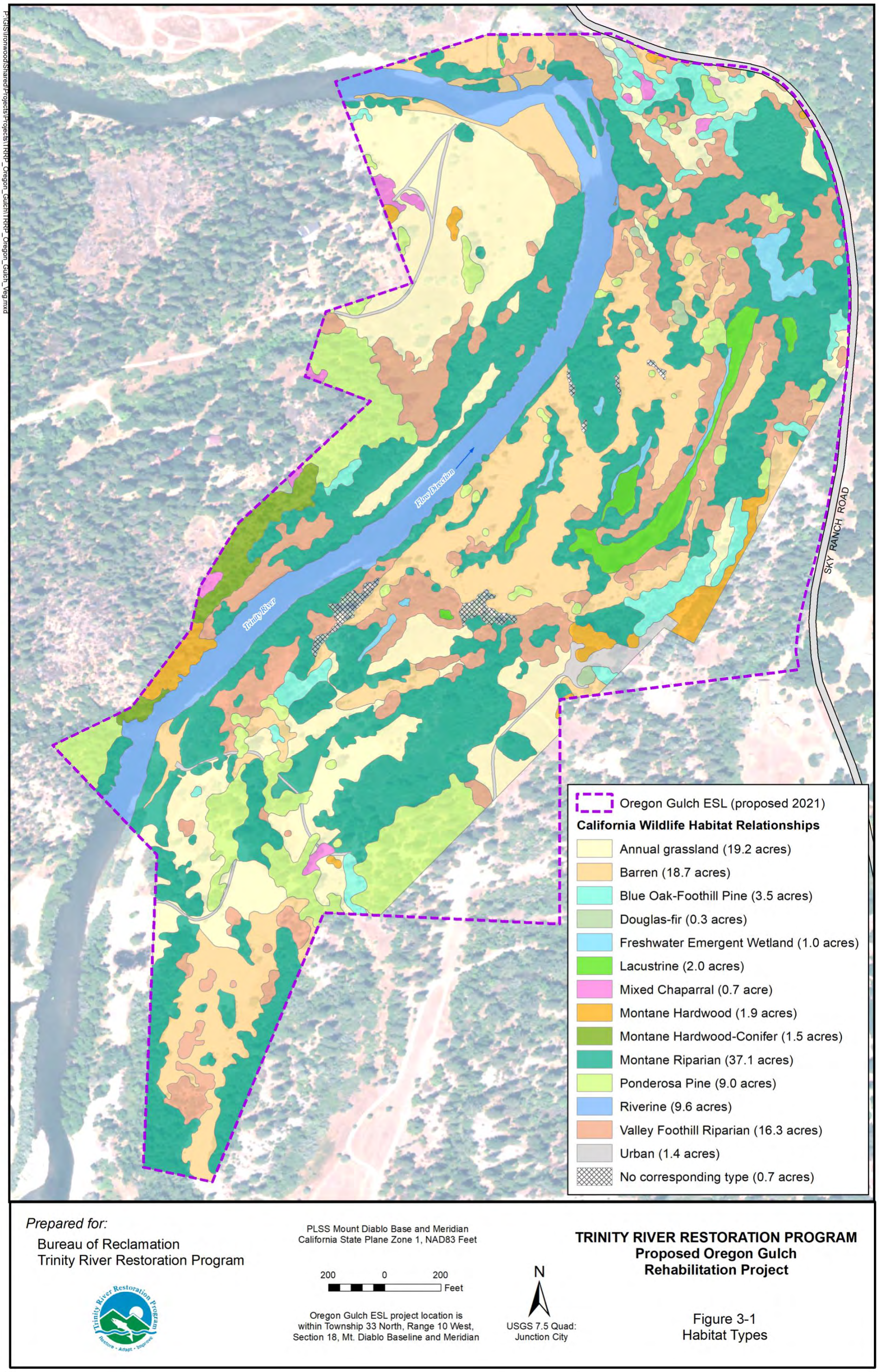
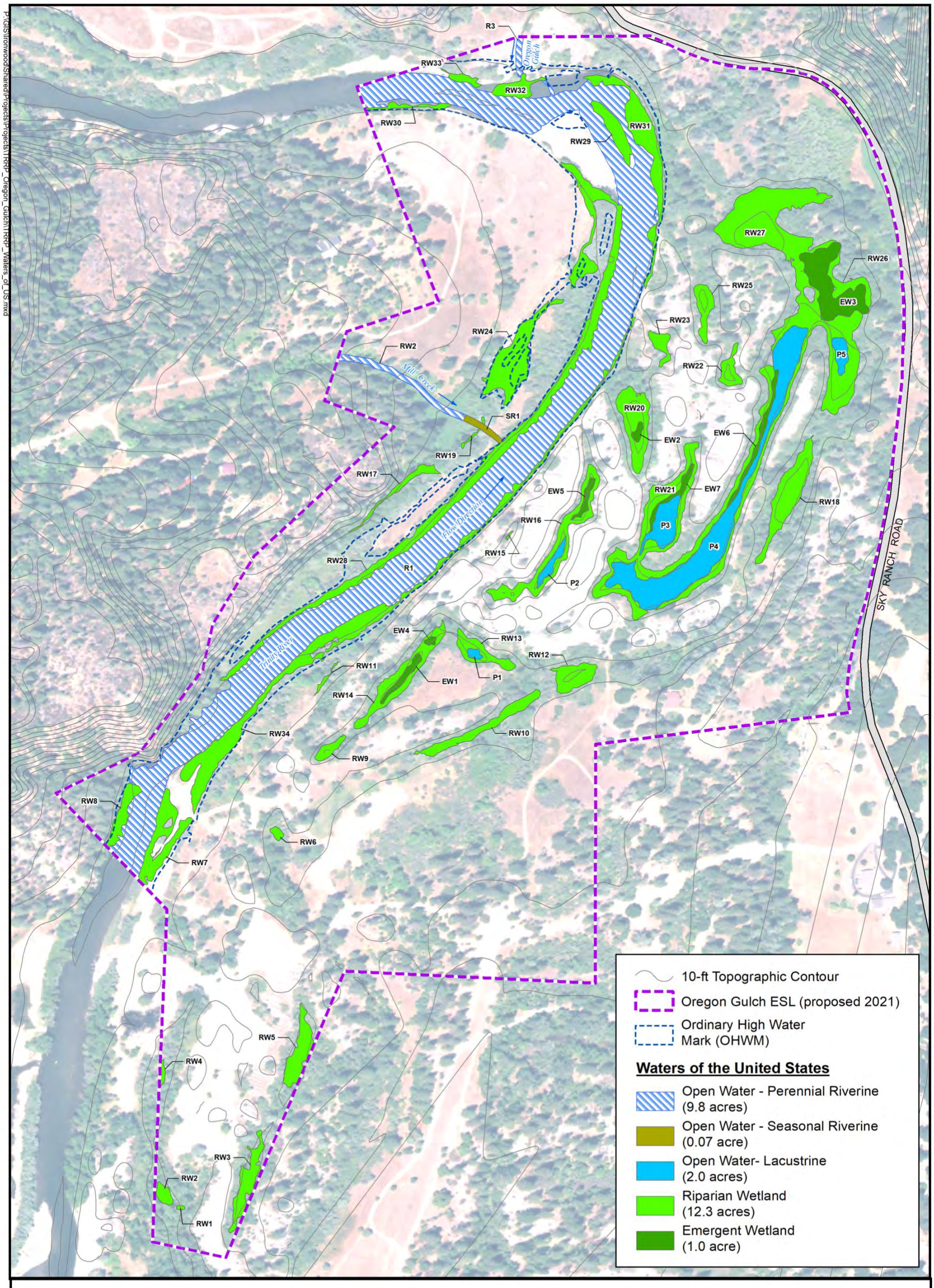


Figure 3-2. Potential Waters of the United States in the Oregon Gulch ESL



Wildlife

No wildlife species listed under the ESA or CESA as threatened, endangered, or candidates for listing as threatened or endangered were observed in the project ESL during field surveys. The highly disturbed complex of dredge tailings deposits with isolated riparian and upland vegetation does not provide habitat for the northern spotted owl.

The riparian vegetation along the Trinity River, in association with adjacent and nearby chaparral and woodland habitats, provides connected habitat and travel corridors for various common wildlife species in an area that has been fragmented by rural residential development and road building. Common wildlife species include deer *(Odocoileus hemionus)*, river otter *(Lontra canadensis)*, beaver *(Castor canadensis)*, cliff swallow *(Hirundo pyrrhonota)*, American dipper (*Cinclus mexicanus*), and raccoon *(Procyon lotor)*.

Special-status wildlife species that may use habitats in the project ESL include:

- Pacific Fisher North Coast/Southern Oregon (NCSO) Distinct Population Segment (DPS) *(Pekania pennanti)*[14], is a California species of special concern and a BLM sensitive species. The USFWS declined to list the NCSO DPS of the Pacific Fisher in its May 2020 final rule (USWS 2020).
- Ring-tailed cat *(Bassariscus astutus)* is a California fully protected species.
- Bald eagle *(Haliaeetus leucocephalus)* is an endangered species under the California ESA, a BLM Sensitive species, and a California fully protected species.
- Foothill yellow-legged frog *(Rana boylii)* is a BLM sensitive species. The California Fish and Game Commission recently found that listing of the Northwest/North Coast clade of *Rana Boylii* was not warranted in its March 2020 determination.
- Western pond turtle *(Emys marmorata)* is a California species of special concern and a BLM sensitive species.
- California mountain kingsnake (*Lampropeitis zonata)* is a BLM sensitive species.
- Several bird species that are BLM sensitive species or California species of special concern, including golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaetus leucocephalus*).
- Seven bats species that are BLM sensitive species or California species of special concern, including fringed myotis (*Myotis thysanodes*), long-eared myotis (*Myotis evotis*), pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff-bat (*Eumops perotis californicus*), and Yuma myotis (*Myotis yumanensis*).
- The terrestrial snails hooded lancetooth (*Ancotrema voyanum*) and Trinity shoulderband (*Helminthoglypta talmadgei*) are both BLM sensitive species. Surveys conducted by BLM in August and September 2020 show that the upper 0.2 mile of the project ESL are in an area of high-density mussel occupancy (upstream from Mill Creek) while the lower 0.6 mile of the project ESL are in an area of low mussel density (downstream from Mill Creek) (BLM 2020).
- The freshwater western pearlshell mussel (*Margaritifera falcata*) and western pearlshell mussel (*Margaritifera falcata*) are BLM sensitive species.

[14] The California Fish and Game Commission Notice of Findings dated April 20, 2016, notes that the Southern Sierra Nevada Evolutionary Significant Unit (ESU) (defined as south of the Merced River) is recognized as Threatened, while listing of the Northern California ESU was not warranted.

Most of the sensitive species are riparian species and may be found using trees in the montane and valley foothill riparian habitats or wetlands in the project ESL. Appendix I provides two tables that list the BLM sensitive species considered in this EA/IS as required under the National Forest Management Act and the BLM Redding RMP. A number of other BLM sensitive species are not likely to occur within or adjacent to the project ESL. Additional details on these federal and state special-status species can be found in section 4.7, Table 4.7-1, and Appendix C of the Master EIR.

3.13.2 Environmental Consequences

Alternative 1

Vegetation and Special-Status Plants

Under Alternative 1, the proposed rehabilitation activities are intended to enhance the wetland, riverine, and upland (i.e., dredge tailings) habitats in the project ESL to improve the quality of spawning habitat for anadromous fish species and other riparian-dependent species. Alternative 1 would convert 9.2 acres of non-riparian areas (e.g., terrace deposits) to floodplain and native riparian habitat within 3 to 5 years post-project. Temporary disturbance of these habitats in the project ESL would occur in conjunction with vegetation removal, grading, and other construction activities.

There are several activity areas (e.g., U-1, U-2, IC-2, and C areas west of the Trinity River) in the project ESL where impacts to mature montane hardwood, ponderosa pine, and montane riparian habitat would occur on lands managed by BLM. BLM reviewed these areas and documented that Alternative 1 (including vegetation removal) would meet the criteria under Exemption C of the Pechman Exemptions (October 11, 2006, Order) (see Appendix H of this EA/IS) because the activity areas are the focus of a riparian and stream improvement project in the which the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning and the stream improvement work is the placement large wood, channel and floodplain reconstruction, and removal of channel diversions.

At some activity areas (e.g., R-1, R-2, R-3), populations of invasive plants would be removed to expand floodplain habitat for salmonids and other aquatic organisms. Alternative 1 is intended to reduce the existing populations of noxious weeds and invasive plant species through grading, clearing, and revegetation activities as well as periodic flooding of newly constructed floodplains. During the rehabilitation activities, control measures for invasive organisms (e.g., Himalayan blackberry and yellow star thistle) include the use of weed-free erosion control materials and washing equipment. These measures would be implemented in accordance with environmental commitment EC-VW-9 [4.3-2b and 13d] (see Table 2-2) to prevent the spread of noxious weeds in the project ESL. However, even with these control measures and active design decisions to reduce existing populations, invasive species cover is likely to increase in areas disturbed by restoration activities. Long-term monitoring of the rehabilitation sites and adaptive measures in accordance with EC-FR-4 [4.7-1b] would monitor the recovery of upland, wetland, and riparian areas including the prevalence of invasive species, consistent with TRRP's 2016 Draft Riparian Revegetation and Monitoring Plan. This increase in invasive species cover is expected to reduce over time as native riparian vegetation becomes more robust. Areas contaminated with known occurrences of didymo would be avoided. If no uncontaminated areas are available for water drafting, water drafting equipment would be cleaned by approved methods prior to drafting water from an uncontaminated location. Didymo-infested water shall be discharged away from a water source or to the same source where it was taken.

Special-status plants have not been found in the project ESL and, therefore, would not be affected by the rehabilitation activities.

Waters and Wetlands

Construction activities associated with this alternative would result in temporary impacts to waters under the jurisdiction of the USACE (jurisdictional waters), which include the Trinity River and the wetlands and streams in the project ESL. Direct project impacts (i.e., impacts associated with work in the proposed activity areas) would occur on approximately 12.6 acres of waters and wetlands and approximately 23.0 acres of riparian habitat that is not riparian wetland.

Table 3-6 and Figure 3-3 outline the impacts to riparian habitat. Table 3-7 and Figure 3-4 show the impacts to wetlands and waters of the United States.

Table 3-6. Summary of Impacts to Riparian Habitat in the Oregon Gulch ESL

Waters of the United States	Total Activity Area Impact Acreage
Montane Riparian (total)	18.9
Valley Foothill Riparian (total)	10.9
Total Riparian Habitat Impacts (wetland and non-wetland)	**29.0**
Total Non-wetland Riparian Habitat Impacts	**23.1**

Table 3-7. Summary of Impacts to Wetlands and Waters of the United States in the Oregon Gulch ESL

Waters of the United States (Cowardin Class [a])	Total Activity Area Impact Acreage
Riparian Wetland (PFO, PSS)	5.9
Seasonal Emergent Wetland (PEM)	0.5
Other Waters: Lacustrine (L2UB1)	1.9
Other Waters: Perennial Stream (R3UB, R3US)	3.9
Total Waters of the United States Impacts	**12.4**

[a] The Cowardin classification system is a system for classifying wetlands, devised by Lewis M. Cowardin et al. in 1979 for the USFWS.
PFO = palustrine forested wetland; PSS = palustrine scrub-shrub wetland; PEM = palustrine emergent wetland; L2UB1 = lacustrine littoral unconsolidated bottom – cobble/gravel water body; R3UB = riverine upper perennial unconsolidated bottom; R3US = riverine upper perennial unconsolidated shore.

Revegetation would occur within all IC and U activity areas, as well as some A and C activity areas. As described in section 2.1.10, both planting and natural recruitment of native species are planned for the revegetation of the riparian and upland areas under Alternative 1. These revegetation efforts would follow TRRP's 2016 Draft Riparian Mitigation and Monitoring Plan and would incorporate the requirements of BLM and other cooperating, responsible, and trustee agencies and landowners.

Revegetation of native species would result in the reestablishment of approximately 24.7 acres of habitat in five elevation zones, which include emergent wetlands consisting of ponds, channel margins, and sedge wetlands; riparian habitat consisting of willows and cottonwoods; and riparian infill, transition, and upland riparian habitats. Up to 39.5 acres of areas disturbed by project activities would also be seeded and

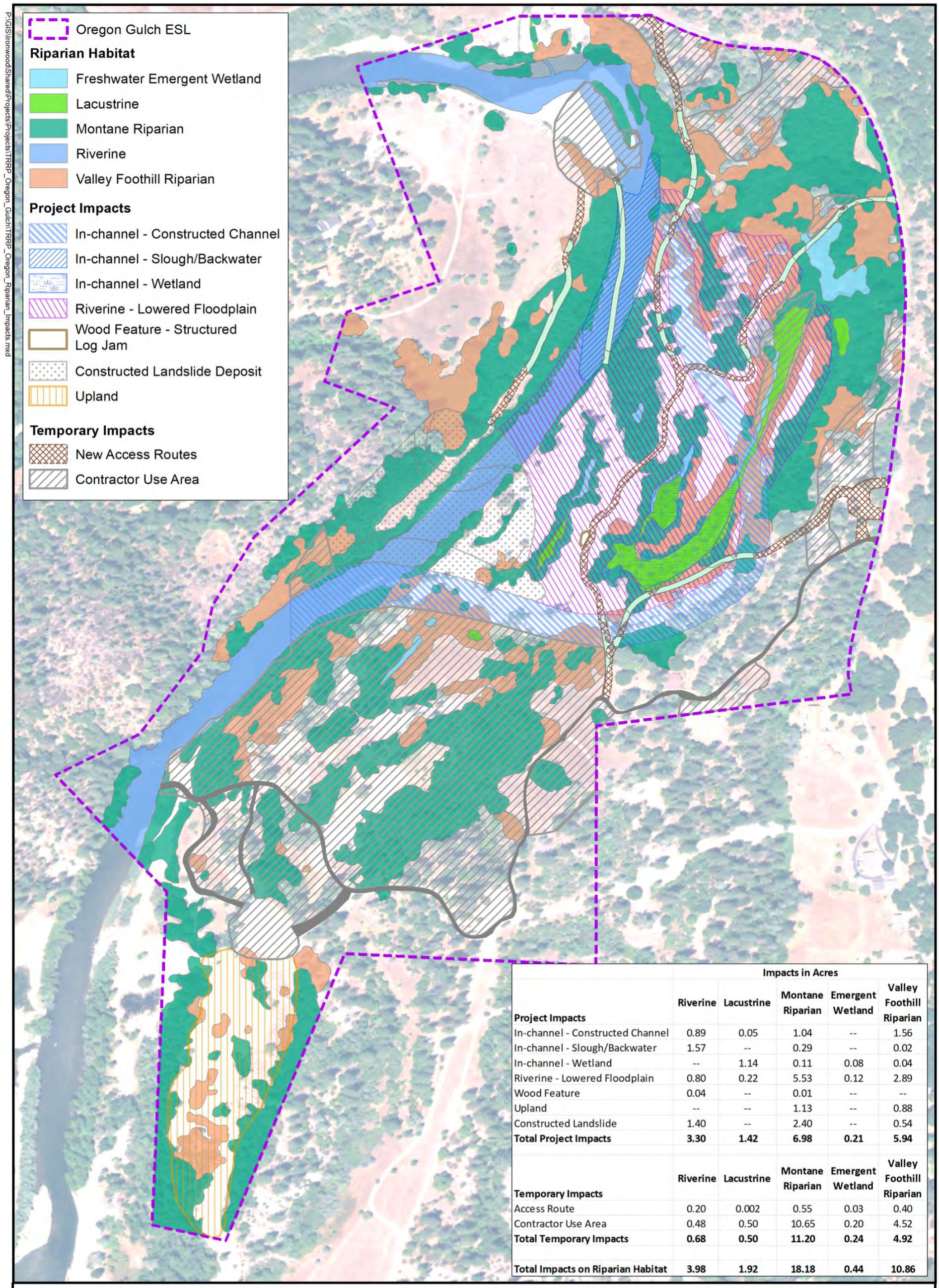
mulched[15]. Revegetation at U-2 (6.6 acres) and new floodplain landforms (R-1, R-2, and R-3; 18.1 acres) would include existing ponds, wetlands, and forested islands. The remaining 9.0 acres do not require revegetation as they would become in-channel features. As shown in Tables 3-6 and 3-7, this alternative would meet the TRRP's objective of no net loss of riparian habitat in the long term.

Environmental commitments have been developed to ensure that the project would not affect individuals or populations of BLM sensitive species and that this alternative is not likely to result in a trend towards federal listing or loss of viability of the species. Temporary disturbance associated with this alternative could discourage wildlife use of the habitats in and near the project ESL. Most wildlife species, such as deer, beaver, and most birds, would be able to use nearby habitats to avoid the disturbance and return once the rehabilitation activities are complete and riparian and upland revegetation reestablishes over a 3- to 5-year period.

Impacts to BLM sensitive plant species with habitat present in the project ESL would be avoided by implementing EC-VW-2, which requires two preconstruction surveys and flagging and exclusion fencing around individuals and populations. If impacts cannot be fully avoided, salvage and relocation of individual plants to a suitable habitat location nearby would occur.

[15] On federal lands, seed would be from native sources and mulch would be a combination of weed-free straw and chips/slash from vegetation clearing in the project ESL.

Figure 3-3. Impacts to Riparian Habitat within the Oregon Gulch ESL



Project Impacts	Impacts in Acres: Riverine	Lacustrine	Montane Riparian	Emergent Wetland	Valley Foothill Riparian
In-channel - Constructed Channel	0.89	0.05	1.04	--	1.56
In-channel - Slough/Backwater	1.57	--	0.29	--	0.02
In-channel - Wetland	--	1.14	0.11	0.08	0.04
Riverine - Lowered Floodplain	0.80	0.22	5.53	0.12	2.89
Wood Feature	0.04	--	0.01	--	--
Upland	--	--	1.13	--	0.88
Constructed Landslide	1.40	--	2.40	--	0.54
Total Project Impacts	**3.30**	**1.42**	**6.98**	**0.21**	**5.94**

Temporary Impacts	Riverine	Lacustrine	Montane Riparian	Emergent Wetland	Valley Foothill Riparian
Access Route	0.20	0.002	0.55	0.03	0.40
Contractor Use Area	0.48	0.50	10.65	0.20	4.52
Total Temporary Impacts	**0.68**	**0.50**	**11.20**	**0.24**	**4.92**
Total Impacts on Riparian Habitat	**3.98**	**1.92**	**18.18**	**0.44**	**10.86**

Prepared for:

Bureau of Reclamation
Trinity River Restoration Program

PLSS Mount Diablo Base and Meridian
California State Plane Zone 1, NAD83 Feet

200 0 200 Feet

Oregon Gulch ESL project location is within Township 33 North, Range 10 West, Section 18, Mt. Diablo Baseline and Meridian

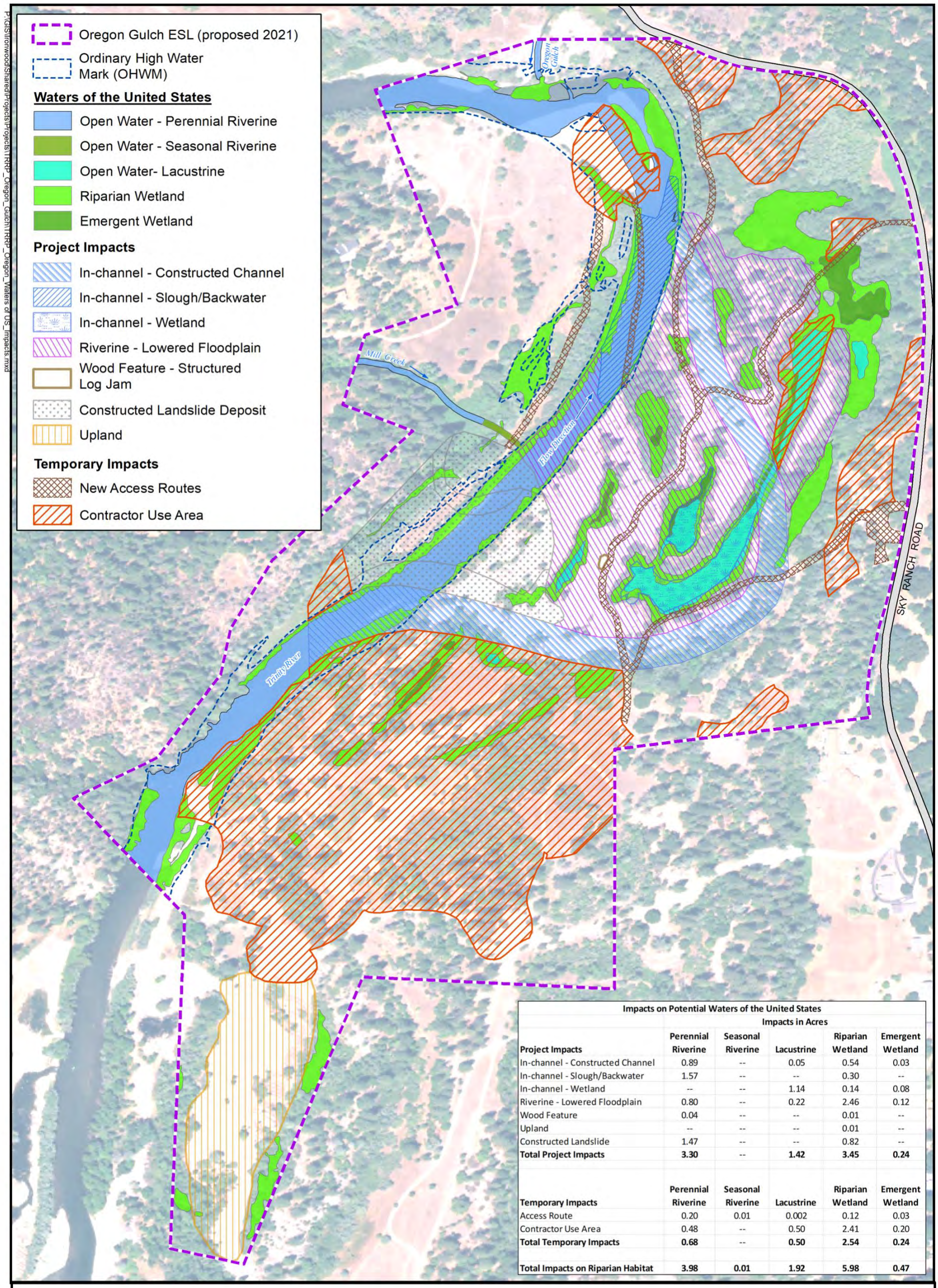
N

USGS 7.5 Quad: Junction City

TRINITY RIVER RESTORATION PROGRAM
Proposed Oregon Gulch Rehabilitation Project

Figure 3-3
Potential Impacts to Riparian Habitat

Figure 3-4. Impacts to Waters of the U.S. within the Oregon Gulch ESL



Impacts on Potential Waters of the United States

	Impacts in Acres				
Project Impacts	**Perennial Riverine**	**Seasonal Riverine**	**Lacustrine**	**Riparian Wetland**	**Emergent Wetland**
In-channel - Constructed Channel	0.89	--	0.05	0.54	0.03
In-channel - Slough/Backwater	1.57	--	--	0.30	--
In-channel - Wetland	--	--	1.14	0.14	0.08
Riverine - Lowered Floodplain	0.80	--	0.22	2.46	0.12
Wood Feature	0.04	--	--	0.01	--
Upland	--	--	--	0.01	--
Constructed Landslide	1.47	--	--	0.82	--
Total Project Impacts	**3.30**	--	**1.42**	**3.45**	**0.24**
Temporary Impacts	**Perennial Riverine**	**Seasonal Riverine**	**Lacustrine**	**Riparian Wetland**	**Emergent Wetland**
Access Route	0.20	0.01	0.002	0.12	0.03
Contractor Use Area	0.48	--	0.50	2.41	0.20
Total Temporary Impacts	**0.68**	--	**0.50**	**2.54**	**0.24**
Total Impacts on Riparian Habitat	**3.98**	**0.01**	**1.92**	**5.98**	**0.47**

Prepared for:

Bureau of Reclamation
Trinity River Restoration Program

PLSS Mount Diablo Base and Meridian
California State Plane Zone 1, NAD83 Feet

200 0 200 Feet

Oregon Gulch ESL project location is within Township 33 North, Range 10 West, Section 18, Mt. Diablo Baseline and Meridian

N

USGS 7.5 Quad: Junction City

TRINITY RIVER RESTORATION PROGRAM
Proposed Oregon Gulch Rehabilitation Project

Figure 3-4
Impacts of Potential Waters of the United States

Wildlife

Pacific fisher individuals may use the habitats adjacent to the Trinity River for foraging, but are not expected to breed or den within the project ESL. Transitory individuals of this species would likely avoid areas where construction is proposed, and project impacts would not jeopardize the continued existence of the species.

Vegetation removal would occur outside the nesting season for birds (after August 1) and the breeding season for ring-tailed cats and before bats establish maternity colonies (i.e., in early February). If this is not practicable, preconstruction surveys would be conducted to identify active bird nest sites, bat roost sites, or ring-tailed cat dens in or adjacent to the project ESL. No-disturbance buffers would be established around the active sites or dens until they are no longer occupied, in accordance with environmental commitments EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], and EC- VW-8 [4.7-9a-c] (see Table 2-2). With these environmental commitments, no take of ESA-listed bird species or ring-tailed cat would occur, direct impacts on other special-status avian and wildlife species would be minimized or completely avoided, and there would be no indirect effects.

Both foothill yellow-legged frog and western pond turtle are known to use the Trinity River and adjacent habitats. The frog may use pools and slow-moving areas of the river with adequate substrate for egg laying, and disturbance to these areas during in-water activities could dislodge egg masses or injure frogs. Turtles may nest in upland areas adjacent to the river or be found in the water, and disturbance in these areas could damage nests or injure turtles. Preconstruction surveys for breeding and nesting activity of these species would be conducted in accordance with EC-VW-4 [4.7-5a-d] and EC-VW-5 [4.7-6a-e], and foothill yellow-legged frog egg masses or western pond turtle nests that could be disturbed by the rehabilitation activities would be relocated to nearby suitable habitat outside the activity areas.

Precautionary measures would also be taken during the rehabilitation activities if the frog or turtle is encountered in an activity area, and the individual(s) would be relocated outside the activity areas in accordance with EC-VW-4 and EC-VW-5. With these environmental commitments, no take of foothill yellow-legged frog would occur consistent with CESA, direct impacts on western pond turtle would be minimized or completely avoided, and there would be no indirect effects.[16]

Native freshwater mussel populations are known to occur along the Trinity River corridor and are likely present within the project ESL. Mussel beds observed within the boundaries of in-channel activity areas would be flagged for avoidance and, to the extent feasible, individuals would be relocated to nearby appropriate habitat that would not be disturbed (see EC-VW-10). Some mussels may inadvertently be physically displaced during construction. This effect would be minimal due to the large populations known to occur at other locations within the project ESL that would be protected as well as upstream and downstream.

There is no habitat for protected terrestrial snails along the Trinity River within the project ESL. These species prefer moist forest or limestone habitats that do not exist in the area and they do not occupy areas that periodically inundate during high flows.

Once the rehabilitation activities are complete, the habitats in the project ESL would include more riparian and wetland habitat alongside channels off the mainstem Trinity River, providing additional riverine habitat and benefitting aquatic- and riparian-dependent species. Revegetation of disturbed activity areas would return them to their current or better conditions and would ensure reestablishment of native plants while reducing the extent of non-native and invasive plants. If invasive plants recolonize the restored areas, Reclamation would implement targeted control methods to remove the plants and

[16] The activities are expected to improve habitat for common and special-status reptiles and amphibians by increasing functional alluvial habitat and converting dredge tailings to more productive upland habitat.

reestablish native plants in accordance with EC-VW-9 [4.7-13a-g]. Long-term monitoring of the rehabilitation sites and adaptive measures to further enhance or create additional riparian or wetland habitat in accordance with EC-FR-4 [4.7-1b] would ensure that no net loss of riparian or wetland habitat occurs, consistent with TRRP's 2016 Riparian Revegetation and Monitoring Plan. The rehabilitation activities would benefit wildlife, particularly wetland and riparian species, by enhancing the Trinity River corridor for nesting, breeding, roosting, foraging, and other activities. The corridor would continue to function as a movement corridor for many wildlife species, and the enhanced floodplain and riparian conditions could attract more wildlife to the project ESL.

With the inclusion of CEQA mitigation measures EC-VW-9 [4.3-2b], EC-VW-1[4.7-1a], EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], EC-VW-8 [4.7-9a-c], EC-VW-4 [4.7-5a-d], EC-VW-5 [4.7-6a-e], EC-VW-9 [4.7-13a-g], and EC-FR-4 [4.7-1b] described in this section, impacts under CEQA related to vegetation, wildlife, and wetlands considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, no temporary or permanent disturbance to the habitats, plants, wildlife, or wetlands and other waters would occur in the project ESL. Habitat conditions in the project ESL would remain similar to current conditions, and the riparian corridor would be subjected to current Trinity River influences without the enhancements to the riparian and wetland habitats. The invasive yellow star thistle and other invasive plants would continue to dominate annual grasslands in the project ESL. Special-status wildlife species would continue to use habitats in the project ESL that are suitable for them.

Under Alternative 2, vegetation, wildlife, and wetland resources would persist similar to existing conditions. Therefore, there would be no impacts on these resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.14 WILD AND SCENIC RIVERS

3.14.1 Affected Environment

The Trinity River was designated by the Secretary of the Interior as a federal Wild and Scenic River in 1981 under the 1968 Federal Wild and Scenic Rivers Act (WSRA). In addition to the mainstem Trinity River from the confluence with the Klamath River to 100 yards below Lewiston Dam, three other sections of the river were designated: the North Fork from the Trinity River confluence to the southern boundary of the Trinity Alps Wilderness Area, the South Fork from the Trinity River confluence to the SR 36 bridge crossing, and the New River from the Trinity River confluence to the Trinity Alps Wilderness Area. The mainstem Trinity River from 100 yards below Lewiston Dam downstream to Cedar Flat is classified as a "Recreational" wild and scenic river. In 1998, BLM delineated the wild and scenic river corridor.

The sections of the Trinity River described above were designated as Wild and Scenic to preserve the river's free-flowing condition, water quality, and Outstandingly Remarkable Values (ORVs). The ORV that was identified on the date of designation was the anadromous and resident fisheries. Under an interagency agreement between the National Park Service, BLM, and the Forest Service, BLM would have the responsibility for conducting WSRA Section 7 determinations for the mainstem Trinity River from Lewiston Dam to the confluence with the North Fork Trinity River. Appendix J provides additional information on this topic.

The section of the Trinity River in the project ESL was designated as Scenic in 1981 under the federal and state Wild and Scenic Rivers Acts (WSRA; Public Law 90-542 1968). This designation serves to preserve the river's free-flowing condition, water quality (e.g., extremely low turbidity levels under low-flow conditions), and ORVs. The section of the Trinity River subject to the Proposed Action was found to have ORVs due to its anadromous fishery (Federal Register Vol. 46, No. 14, January 23, 1981). Appendix

J provides a comprehensive analysis of and determination for this alternative consistent with the requirements of the Section 7 of the WSRA.

3.14.2 Environmental Consequences

Alternative 1

Implementation of Alternative 1 would have a temporary effect on the scenic and recreational components of the Trinity River's Wild and Scenic River values. However, the rehabilitation activities would ultimately enhance the overall form and function of the Trinity River, thereby enhancing the ORVs for which it was designated a federal Wild and Scenic River.

Implementation of this alternative would increase the potential for increases in turbidity levels during and, to a lesser degree, after construction. Flows that typically contribute to good fishing tend to be clear; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in section 4.8, Recreation, of the Trinity River Master EIR) and could adversely affect aesthetic resources. As described in Table 2-2, four specific environmental commitments developed to reduce water quality impacts have been integrated into this alternative to the reduce the impacts of increased turbidity levels that could be visible to recreational users. Temporary effects to boaters and recreationists from reduced flows and water velocity during construction are addressed in the Recreation section. Impacts from temporary roads used to access the site and for continued vegetation maintenance after construction were designed to remain inconspicuous to river users.

Under Section 7 of the federal WSRA, direct and adverse effects to the values for which the Trinity River was recognized as a Wild and Scenic River are prohibited. Based on the analysis and determination presented in Appendix J, this alternative would enhance the fishery ORV as well as maintain the water quality and enhance the free-flowing conditions for which the Trinity River was designated. Therefore, this alternative would be consistent with the provisions of the federal WSRA.

With the inclusion of CEQA mitigation measures EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e] and EC-RE-1 [4.8-1a], the impacts under CEQA considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Alternative 2

Under Alternative 2, there would be no degradation or obstruction of a scenic view as a result of construction because the project would not be implemented nor would there be an impact on the scenic quality of the Wild and Scenic River. Therefore, there would be no impacts as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.15 CEQA SIGNIFICANCE

As described in section 3.1 of this EA/IS, this document is an integrated NEPA/CEQA document. Table 3-8 provides a summary of the CEQA mitigation developed for each resource topic discussed in this chapter (see Appendix F for details). It also identifies the level of significance as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Table 3-8. Summary of Resource Topics Considered in This EA/IS

Resource Topic	CEQA Mitigation	CEQA Significance
Aesthetics	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a].	Less than Significant
Air Quality	EC AQ-1 [4.11-a-1a], [4.11-2a]	Less than Significant
Cultural Resources	EC-CU-1 [4.10-2a], and EC-CU-2 [4.10-2a]	Less than Significant
Fishery Resources	EC FR-1 [4.6-1a,1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d]	Less than Significant
Geomorphology and Soils	EC-GS-1[4.3-2a] and EC-GS-2 [4.3-2b]	Less than Significant
Hydrology and Flooding	Not Applicable	Less than Significant
Land Use	Not Applicable	Less than Significant
Noise	EC-NO-1 [4.14-1a], and EC NO-2 [4.14-1b]	Less than Significant
Recreation and Wild and Scenic Rivers	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a]	Less than Significant
Transportation and Traffic	EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16-4a]	Less than Significant
Vegetation, Wildlife, and Wetlands	EC-VW-9 [4.3-2b], EC-VW-1[4.7-1a], EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], EC-VW-8 [4.7-9a-c], EC-VW-4 [4.7-5a-d], EC-VW-5 [4.7-6a-e], EC-VW-9 [4.7-13a-g], and EC-FR-4 [4.7-1b]	Less than Significant
Water Quality	EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e,4.5-2a-2c], and EC WQ-5 [4.5-3a-3c]	Less than Significant

4 CUMULATIVE IMPACTS AND OTHER CEQA AND NEPA CONSIDERATIONS

The analysis in this chapter tiers from the "statutory considerations" discussion in Chapter 5 of the Master EIR; the EA/IS incorporates that discussion by reference. That discussion addressed certain topics required under CEQA, such as cumulative impacts, the significant environmental effects of the Proposed Action (Alternative 1), the significant effects that cannot be avoided if the Proposed Action is implemented, and the growth-inducing effects of the Proposed Action. Under NEPA, additional discussions are also required, namely, the reasonably foreseeable impacts which includes predictable environmental trends in the area in the baseline analysis of the affected environment. These discussions are incorporated by reference from the Master EIR and are summarized below; see the Master EIR for complete discussions of these topics. This section also provides updated information concerning the cumulative impacts of additional projects that were not identified as foreseeable in the Master EIR. Appendix K provides a summary of cumulative impacts for the project.

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 Master EIR, and the regulatory framework for NEPA is discussed in Chapter 8, section 8.2.1 of the Master EIR. 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 Action when added to other closely related past, present, and reasonably foreseeable future projects.

The CEQ's implementing regulations for NEPA (formerly 40 CFR 1508.7) have recently been updated so that cumulative impact analyses are no longer required. However, the revised regulations (40 CFR 1508.7) do stipulate that, "to the extent environmental trends or planned actions in the area(s) are reasonably foreseeable, the agency should include them in the discussion…". The discussion of CEQA cumulative impacts herein covers the breadth of such reasonably foreseeable actions and environmental trends. A full description of these impacts is outlined in Appendix K.

4.1.1 Methodology and Analysis

The methodology for the cumulative impact analysis is described in section 5.2.2 of the Master EIR. This assessment of cumulative impacts is considered in the same cumulative context; however, the list of related projects and programs considered in this analysis has been updated to include those closely related past, present, and reasonably foreseeable future projects listed below.

The cumulative impacts section provided in Chapter 5 of the Master EIR identified related foreseeable projects through the list approach, based on input from the lead and cooperating agencies. The geographic scope of the area examined for cumulative effects in that assessment was the Trinity River corridor between Lewiston Dam and the confluence of the North Fork Trinity River at Helena, California. The following projects were considered in that section and are still considered timely and relevant:

- Fish Habitat Management
- Trinity River Mainstem Fishery Restoration Project
- California Coastal Salmonid Restoration Program/Five-Counties Salmonid Conservation Program
- Clean Water Act Section 303(d) Total Maximum Daily Load Requirements Program

Since 2009, the TRRP has implemented projects at all the Phase 1 channel rehabilitation sites and at nine of the Phase 2 sites. The Deep Gulch and Sheridan sites were completed in 2017. The Bucktail site

completed in 2010 was expanded in 2016 to include additional area. The Dutch Creek project was completed in 2020. The Chapman Ranch Phase A site was completed in 2019, and the Phase B site will be completed in 2021. Concurrently, the TRRP has continued to implement coarse-sediment (gravel) augmentation at a number of locations downstream of Lewiston Dam, and fine sediment has been removed from both the Hamilton Ponds and Grass Valley Creek Reservoir. In addition, the TRRP-managed flows have been implemented yearly since the Master EIR was certified in 2009. Ongoing monitoring efforts by the TRRP and its partners continue to document improvements in habitat use and restoration of alluvial processes and riparian vegetation.

Since 2009, there have been a number of watershed restoration and road sediment reduction projects implemented by various agencies and organizations throughout the Trinity River basin. While some of these were considered in the Master EIR, the Forest Service and the Trinity County Resource Conservation District have completed a wide array of additional projects intended to improve watershed conditions, restore aquatic habitat, improve aquatic connectivity, and reduce road-related sediment delivery to streams and rivers.

The Helena Fire in 2017 and the Carr Fire in 2018 affected large portions of the Trinity River watershed and are expected to result in changes to upland and riparian vegetation and sediment flux throughout the watershed for the foreseeable future. These changes could have impacts on water quality and habitat for aquatic, riparian, and terrestrial species. While the EA/IS includes design measures and environmental commitments intended to reduce the direct and indirect effects of the Proposed Action associated with sediment flux, the timing of this project does not coincide with typical precipitation events for this area; any turbidity produced during construction would therefore not contribute to this sediment flux, and lowered floodplains would capture suspended sediment and reduce long-term sediment impacts from the fires.

The TRRP has identified the need to develop a long-term source of coarse sediment (i.e., spawning gravel) for use in the lower reaches of the Trinity River (downstream of Douglas City). This need could result in harvesting and processing of dredge tailings deposits at various TRRP sites identified in the Master EIR. A project of this kind could have impacts on various resources, but it is speculative at this point in the planning cycle to be specific with respect to the location and/or type of impacts that may occur.

In 2017, the TRRP completed the Deep Gulch/Sheridan Creek project, and in 2019, it completed the Chapman Ranch Phase A project. The Chapman Ranch Phase B project is scheduled to be completed in 2021. These projects are just downstream of the Oregon Gulch project ES, and would cumulatively improve anadromous fish spawning and rearing habitat throughout the extent of the Trinity River upstream of Junction City.

While there is a potential for cumulative impacts from sediment delivery and transport from previous and current TRRP river rehabilitation and sediment management projects, this would be a beneficial process that would contribute to the TRRP's overall objective of a functional alluvial river. It is assumed, however, that the aquatic impacts from those earlier projects have been mitigated, and the amount of time that has elapsed since they were completed has further dissipated the effects downstream. The previous issue-specific analysis in Chapter 5 of the Master EIR sufficiently addresses the cumulative impacts of the Proposed Action, and no substantial differences would arise in consideration of the Proposed Action separately.

4.2 GROWTH-INDUCING IMPACTS

Section 5.3 of the Master EIR evaluated the potential for growth that could be induced by implementation of the Proposed Action 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 in the project ESL would not remove any constraints to development, create new or improved infrastructure, or otherwise create conditions that would induce growth. The Proposed Action 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 Action are not likely to directly or indirectly result in substantial development or population growth. Therefore, implementation of the Proposed Action would not result in a significant growth-inducing impact.

4.3 ENVIRONMENTAL COMMITMENTS AND CEQA MITIGATION MEASURES

Reclamation's NEPA implementation guidance recommends that a list of environmental commitments for the preferred alternative be included in an EA. Chapter 2 of this EA/IS includes a list of environmental commitments and project design features that are part of the Proposed Action; these are fully described in Appendix E of this EA/IS. Where environmental commitments and project design figures are cited in this document, they are also cross referenced with the relevant mitigation measure described in the MMRP in Appendix F. Because this document is a joint NEPA/CEQA document, mitigation measures have been identified for potentially significant CEQA 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 provides a comprehensive list of CEQA mitigation measures and identifies requirements for timing, responsible parties, and compliance verification.

4.4 SIGNIFICANT IMPACTS UNDER CEQA

CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible (CEQA Guidelines 15021), and determinations of the significance of effects play a critical role in the CEQA process (CEQA Guidelines 15064). Section 5.4 of the 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; Wild and Scenic Rivers; cultural resources; air quality; visual resources; noise; public services and utilities; and traffic and transportation. These potential effects are discussed in the resource sections in Chapter 3, and Appendix A (Environmental Checklist Form) provides specific CEQA documentation. As part of the environmental impact assessment for each resource area, mitigation measures and/or design features have been identified that reduce these impacts to less-than-significant levels. The environmental analysis conducted for the Proposed Action did not identify any effects that, after implementation of the mitigation/design features, remained significant and therefore unavoidable; in addition, no significant irreversible effects associated with the Proposed Action were identified.

5 LIST OF PREPARERS

Bureau of Reclamation and Trinity River Restoration Program Office, Weaverville and Sacramento, California

Mike Dixon, Ph.D.	Executive Director
Brandt Gutermuth	Environmental Scientist
Chad Abel	Implementation Branch Chief
Megan Simon	Natural Resource and NEPA Specialist
Jeanne McSloy	Natural Resource Specialist
Kevin Held	Public Outreach Specialist
Mark Carper	Archaeologist
Jeremy Foin	Archaeologist

Bureau of Land Management, Redding Field Office

Jennifer Mata	Field Manager
Alden Neel	Resource Management Supervisor
Laura Brodhead	Ecologist
Stephen Laymon, Ph.D.	Wildlife/Fisheries Biologist
Ashley Phillips	Planning and Environmental Specialist
Kody Shellhouse	Geologist
Eric Ritter, Ph.D.	Archaeologist
Heidi Rogers	Forester
Charles Wright	Supervisory Realty Specialist

Regional Water Quality Control Board, North Coast Region

Gil Falcone	Environmental Scientist
Jake Shannon	Environmental Scientist
Elizabeth Beryt	Staff Counsel

Ironwood Environmental Consultants

Emily Thorn	Project Manager
Dwight Chapman	Environmental Specialist
Dave Kesonie	Botanist/Wetlands Specialist
Kelly Herbinson	Wildlife Biologist
Samantha Nielson	Staff Biologist
Cindy Lancaster	Sr. Technical Editor/508 Compliance
Kathryn McDonald	Sr. Technical Editor
Samantha Neilson	Ecologist
Steve Hoerber	Sr. GIS Specialist
William Rich	Cultural and Heritage Resources (William Rich & Associates)
Kimberly Rich	Cultural and Heritage Resources (William Rich & Associates)

6 REFERENCES

AECOM. 2013. Historic context for mining along the Trinity River. Report to the U.S. Bureau of Reclamation and U.S. Bureau of Land Management by AECOM, Sacramento, CA

Bailey, J. 2008. The other California gold: Trinity County placer mining, 1848-1962. U.S. Bureau of Reclamation, Technical Service Center, Denver, CO.

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

Bureau of Land Management (BLM). 1986. Manual H-8410-1 - Visual Resource Inventory. <https://blmwyomingvisual.anl.gov/docs/BLM_VRI_H-8410.pdf>.

Bureau of Land Management (BLM). 1993. Redding Resource Management Plan and Record of Decision. United States Department of the Interior, Bureau of Land Management, Redding Resource Area, California.

Bureau of Land Management (BLM). 1995. Mainstem Trinity River Watershed Analysis.

Bureau of Land Management (BLM) 2020. Qualitative Survey of Western Pearlshell Mussel Populations in the Trinity River. Prepared by Tobias Felbeck and Kevin Hauser. BLM Redding Field Office. Draft report.

California Department of Transportation (CalTrans). 2018. Traffic Census Program. <http://www.dot.ca.gov/trafficops/census/volumes2016/Route280-405.html >.

Carter, K. 2005. The Effects of Temperature on Steelhead Trout, Coho Salmon, and Chinook Salmon Biology and Function by Life Stage. California Regional Water Quality Control Board, North Coast Region.

CH2M Hill and Entrix. 2010. Phase II Conceptual Design Value Engineering Study. Task B—Multi-Disciplinary Value Engineering Study No. 1. Prepared for Bureau of Reclamation, Trinity River Restoration Program, Phase II.

Cluer B. J., and Thorne, C. R. 2014. A Stream Evolution Model Integrating Habitat and Ecosystem Benefits. River Research and Applications 30(2), pp. 135-154. DOI: 10.1002/rra.2631.

Costello, J. and S. Wee 2000. Oregon Mountain Summit and La Grange Mine Historic Properties, Supplemental Archaeological Survey Report, Historic Study Report, and Historic Resources Evaluation Report for the Curve Correction Project, State Route 299, near Weaverville, Trinity County. 02-T1-299 PM 47.9/48.4 EA 325500, Contract No. 03AQ314. Report on file at the NEIC in Chico, California.

Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Reprinted 1992. U.S. Fish and Wildlife Service, Washington, DC

Environmental Protection Agency (EPA). 2001. Trinity River Total Maximum Daily Load for Sediment. December.

Fitzgerald, R. T., and Hildebrandt, W. R. 2002. Will the True Age of the Borax Lake Pattern Please Stand Up: The Archaeology of CA-HUM-573, An Early Holocene Site on the South End of Pilot Ridge, Humboldt County, CA. California Department of Transportation, Oakland, California, and Far Western Anthropological Research Group, Inc., Davis, California.

Harrington, James Peabody. 1928 Northern and Central California: Yana/Achomawi/Wintu/Chimariko, John Peabody Harrington papers, National Anthropological Archives, Smithsonian Institution. https://collections.si.edu/search/detail/edanmdm:siris_arc_363720

Hoopa Valley Tribe Design Group. 2019. Trinity River Chapman Ranch (River Mile 82.8–83.8) Draft 90% Design Document.

Knighton, D. 1998. Fluvial Forms and Processes. A New Perspective. Don Mills, Ontario: Oxford University Press.

National Marine Fisheries Service (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.

National Marine Fisheries Service (NMFS). 2014. Final recovery plan for the southern Oregon/northern California coast (SONCC) evolutionarily significant unit of coho salmon (Oncorhynchus kisutch). Report. National Marine Fisheries Service, Arcata, California. Available: http://www.trrp.net/library/document?id=2398.

National Marine Fisheries Service (NMFS). 2020. Biological opinion for the Trinity River Mainstem Fishery Restoration EIS and its effects on Southern Oregon/Northern California Coast coho salmon, Sacramento River Winter-run chinook salmon, and Central Valley steelhead. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. <http://www.trrp.net/library/document/?id=1240>.

Natural Resources Conservation Service. 2018. *Soil Survey of the Trinity County, California, Weaverville Area and Soil Survey of the Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California*.

North Coast Regional Water Quality Control Board (Regional Water Board). 2015. General Water Quality Certification. Order No. R1-2015-0028

North Coast Regional Water Quality Control Board (Regional Water Board). 2011. Water Quality Control Plan for the North Coast Region, May 2011.

North Coast Regional Water Quality Control Board (Regional Water Board) and U.S. Bureau of Reclamation (Reclamation). 2009. Channel Rehabilitation and Sediment Management Activities for Remaining Phase 1 and Phase 2 Sites, Part 1: Final Master Environmental Impact Report and Part 2: Environmental Assessment/Final Environmental Impact Report. Trinity River Restoration Program. February 2015. SCH#2008032110. http://www.trrp.net/library/document/?id=476

North Coast Unified Air Quality Management District. 1995. North Coast Unified Air Quality Management District Particulate Matter (PM_{10}) Attainment Plan. North Coast Unified Air Quality Management District.

Perry, R. W., E. C. Jones, J. M. Plumb, N. A. Som, N. J. Hetrick, T. B. Hardy, J. C. Polos, A. C. Martin, J. S. Alvarez, and K. P. De Juilio. 2018. Application of the Stream Salmonid Simulator (S3) to the restoration reach of the Trinity River, California—Parameterization and calibration (No. 2018-1174). U.S. Geological Survey.

Powers, P.D., M. Helstab, and S.L. Niezgoda. 2019. A Process-Based Approach to Restoring Depositional River valleys to Stage 0, an anastomosing channel network. River Research and Applications 35(1):3-13.

Rich, William, Berrien, Gay and Eric Vollmers. 2015 A Cultural Resources Investigation for the Trinity River Restoration Program Deep Gulch to Sheridan Creek Phase, Trinity County, California.

Rich, William, Berrien, Gay and Eric Vollmers. 2019 A Cultural Resources Investigation for the Trinity River Restoration Program Chapman Ranch Phase A, Trinity County, California.

Rich, W. C., G. Berrian, and E. Vollmers. 2020. A Cultural Resources Investigation for the Trinity River Restoration Program – Oregon Gulch, Located near Junction City, Trinity County, California. Prepared for Ironwood Consulting on behalf of U.S. Department of the Interior, Bureau of Reclamation.

Sacramento Air Quality Management District. 2019. The California Emissions Estimator Model (CalEEMod). February. <http://www.caleemod.com/>.

Som, N. A., R. W. Perry, E. C. Jones, K. De Juilio, P. Petros, W. D. Pinnix, and D. L. Rupert. 2017. N-mix for fish: estimating riverine salmonid habitat selection via N-mixture models. Canadian Journal of Fisheries and Aquatic Sciences 75(7):1048-1058.

Sundahl, Elaine and Gay Berrien.1986 Test Excavations at Two Prehistoric Sites on the Big Bar District, Shasta-Trinity National Forest.

U.S. Forest Service (Forest Service). 2018. Shasta-Trinity National Forest and Six Rivers National Forest. Didymo Post-fire Helena BAER Monitoring. Technical Memorandum. U.S. Forest Service. Weaverville, California. December 6, 2018.

U.S. Department of Agriculture, Natural Resources Conservation Service. 1998. Soil Survey of Trinity County, California: Weaverville Area. U.S. Department of Agriculture. Available at <http://websoilsurvey.nrcs.usda.gov/app/ > (accessed September 17, 2013).

U.S. Environmental Protection Agency (EPA). 2001. Trinity River Total Maximum Daily Load for Sediment. Environmental Protection Agency. December 20, 2001.

U.S. Fish and Wildlife Service (USFWS) and Hoopa Valley Tribe (HVT). 1999. Trinity River Flow Evaluation Final Report. U.S. Fish and Wildlife Service and Hoopa Valley Tribe. June 1999.

U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation, and Hoopa Valley Tribe 2000. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement Record of Decision. October 2000.

U.S. Fish and Wildlife Service (Service). 2020. Endangered and threatened wildlife and plants; endangered species status for southern Sierra Nevada Distinct Population Segment of fisher, Final Rule. Federal Register 85(95): 29532-29589 (May 15, 2020).

U.S. Forest Service (Forest Service). 1995. Shasta-Trinity National Forest Land and Resource Management Plan (LRMP).

Wee, S. and J. Costello. 2001 Historic Roads, Mine Tailings, and Water Systems in Lower Oregon Gulch: Supplemental Archaeological Survey Report, Historic Study Report, and Historic Resources Evaluation Report for a Portion of State Route 299, near Weaverville, Trinity County, CA.

Yurok Tribe. 2018. DRAFT 30% design report, Trinity River Channel Rehabilitation Site at Oregon Gulch. Report to the Trinity River Restoration Program, Weaverville, California.

Yurok Tribe. 2020. 90% Design Report for the Trinity River Rehabilitation Site at Oregon Gulch (River Mile 80.9 to 81.7). Report to the Trinity River Restoration Program, Weaverville, California.

Appendix A – CEQA Environmental Checklist Form

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

CEQA ENVIRONMENTAL CHECKLIST FORM

Project Title:	Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7)
Lead Agency Name and Address:	North Coast Regional Water Quality Control Board 550 Skylane Blvd., Suite A, Santa Rosa, California 95403
Contact Person and Phone Number:	Gil Falcone (707) 576-2830
Project Location:	Trinity County, California
Project Sponsor's Name:	U.S. Bureau of Reclamation Trinity River Restoration Program
General Plan Designation:	Trinity County General Plan – Resource (RE), and BLM 1993 Redding Resource Management Plan — Other (Matrix)
Zoning:	Agricultural 10-Acre Minimum (A10) and Agricultural Forest 20-Acre (AF20) Minimum
Description of Project:	See Chapter 2 of the Environmental Assessment/Initial Study (EA/IS) for the Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7) and Appendix D of the EA/IS.
Surrounding Land Uses and Setting:	See section 3.2.1 of the EA/IS

Other Public Agencies Whose Approval May Be Required (e.g., permits, financing approval, or participation agreement.)

- U.S. Bureau of Land Management, Redding Field Office (Right of Way and Free Use Permit)
- Trinity County Planning Department (Federal Emergency Management Agency compliance)
- U.S. Army Corp of Engineers (Clean Water Act, Section 404 compliance)
- North Coast Regional Water Quality Control Board (Clean Water Act, Section 401 compliance)
- State Water Resources Control Board (compliance with the Construction General Permit)

NATIVE AMERICAN CONSULTATION

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code (PRC) section 21080.3.1?	**No**

If yes, ensure that consultation and heritage resource confidentiality follow PRC sections 21080.3.1 and 21080.3.2 and California Government Code 65352.4

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse

impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

Each of these environmental factors listed below was fully evaluated and one of the following four determinations was made:

- **No Impact:** No impact to the environment would occur as a result of implementing the proposed project.
- **Less Than Significant Impact:** Implementation of the proposed project would not result in a substantial and adverse change to the environment and no mitigation is required.
- **Potentially Significant Impact:** Implementation of the proposed project could result in an impact that has a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (California Environmental Quality Act Guidelines Section 15382).
- **Less Than Significant Impact with Mitigation Incorporated:** A "potentially significant impact", as described above, that can be reduced to a less-than-significant level with the incorporation of project-specific mitigation measures.

None of the following factors were identified as having a greater than significant impact. Under California Code of Regulations, title 14, section 15177, after a Master EIR[1] has been prepared and certified, subsequent projects which the lead agency determines as being within the scope of the Master EIR will be subject to only limited environmental review. Mitigation measures from the Master EIR will be implemented (see Footnote 1 for Master EIR reference). Please see the checklist beginning on page 4 for additional information.

Aesthetics
Agriculture and Forestry
Air Quality
Biological Resources
Cultural Resources
Energy
Geology/Soils
Greenhouse Gas Emissions
Hazards and Hazardous Materials
Hydrology/Water Quality
Land Use/Planning
Mineral Resources
Noise
Population/Housing
Public Services
Recreation
Transportation
Tribal Cultural Resources
Utilities/Service Systems
Wildfire
Mandatory Findings of Significance

[1] 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

DETERMINATION

On the basis of this initial evaluation (choose one):

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

Print Name | Signature | Date

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	Less Than Significant Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Less Than Significant Impact
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less Than Significant with Mitigation Incorporated
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No Impact

Discussion of Impacts

Refer to section 3.4.2 of the EA/IS

Mitigation Measures

See California Environmental Quality Act (CEQA) mitigation measures described in Appendix F of the EA/IS: [4.5-1a-1e], [4.5-2a – 2c], [4.5-3a-3c], 4.5-1e] and [4.8-1a]

AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact

Question	CEQA Determination
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

Question	CEQA Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	Less Than Significant Impact
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	Less Than Significant Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	Less Than Significant with Mitigation Incorporated
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No Impact

Discussion of Impacts

Refer to section 3.7.2 of EA/IS

Mitigation Measures

See CEQA mitigation measures described in Appendix F of the EA/IS: [4.11-a-1a], [4.11-2a].

BIOLOGICAL RESOURCES

Would the project:

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

Discussion of Impacts

Refer to sections 3.12.2 and 3.13.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for fisheries described in Appendix F of the EA/IS: [4.6-1a, 1b], [4.6-4a-4e], [4.6-4f], [4.6-5b], and Environmental Commitment (EC)-FR-5 [4.6a-6d].

See CEQA mitigation measures for vegetation, wildlife and wetlands described in Appendix F of the EA/IS: [4.3-2b], [4.7-1a], [4.7-7 a-d], [4.7-8a-d], [4.7-9a-c], [4.7-5a-d], [4.7-6a-e], [4.7-13a-g], and [4.7-1b].

CULTURAL RESOURCES

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	Less Than Significant with Mitigation Incorporated
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less Than Significant with Mitigation Incorporated
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Less Than Significant with Mitigation Incorporated

Discussion of Impacts

Refer to section 3.5.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix F of the EA/IS: [4.10-2a] and [4.10-2a].

ENERGY

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	No Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

GEOLOGY AND SOILS

Would the project:

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

Discussion of Impacts

Refer to section 3.5.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix F of the EA/IS: [4.10-2a] and [4.10-2a].

GREENHOUSE GAS EMISSIONS

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less Than Significant Impact

Discussion of Impacts

Refer to section 3.7.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for air quality in Appendix F of the EA/IS: [4.11-a-1a] and [4.11-2a].

HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less Than Significant Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact

Discussion of Impacts

Hazards to the public were addressed in the 2009 Master EIR, and no issues were identified. Indirect public health or safety concerns are addressed under air quality, noise, recreation, and transportation and traffic.

Mitigation Measures

Not applicable

HYDROLOGY AND WATER QUALITY

Would the project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	Less Than Significant with Mitigation Incorporated
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	Less Than Significant Impact
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	Less Than Significant with Mitigation Incorporated
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	No Impact
(iv) impede or redirect flood flows?	Less Than Significant with Mitigation Incorporated
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No Impact

Discussion of Impacts

Refer to section 3.11.2 of EA/IS

Mitigation Measures

See CEQA mitigation measures for water quality in Appendix F of the EA/IS: [4.5-1a, b], [4.5-1c], [4.5-1d], [4.5-1e, 4.5-2a-2c], [4.5-3a-3c] [4.11-a-1a] and [4.11-2a].

No mitigation required for Hydrology and Flooding.

LAND USE AND PLANNING

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact

Discussion of Impacts

Refer to section 3.2.2 of the EA/IS

Mitigation Measures

Not applicable

MINERAL RESOURCES

Would the project:

Question	CEQA Determination
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No Impact

Discussion of Impacts

Refer to section 3.9 of the EA/IS

Mitigation Measures

Not applicable

NOISE

Would the project result in:

Question	CEQA Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less Than Significant with Mitigation Incorporated

Question	CEQA Determination
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact

Discussion of Impacts

Refer to section 3.8.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for noise in Appendix F of the EA/IS: [4.14-1a] and [4.14-1b].

POPULATION AND HOUSING

Would the project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

Question	CEQA Determination
a) Fire protection?	No Impact
b) Police protection?	No Impact

Question	CEQA Determination
c) Schools?	No Impact
d) Parks?	No Impact
e) Other public facilities?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

RECREATION

Question	CEQA Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Less Than Significant Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No Impact

Discussion of Impacts

Refer to section 3.3.2 of the EA/IS

Mitigation Measures

The CEQA mitigation measures that address impacts to water quality on recreational use of the Trinity River include: [4.5-1a-1e], [4.5-2a – 2c], [4.5-3a-3c], and [4.5-1e].

See CEQA mitigation measures for noise in Appendix F of the EA/IS: [4.14-1a] and [4.14-1b].

TRANSPORTATION

Would the project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	No Impact
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	No Impact

Question	CEQA Determination
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less Than Significant with Mitigation Incorporated
d) Result in inadequate emergency access?	No Impact

Discussion of Impacts

Refer to section 3.6.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for traffic and transportation in Appendix F of the EA/IS: [4.16-2a] and [4.16-5a].

TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	No Impact
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No Impact

Discussion of Impacts

Refer to section 3.5.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix F of the EA/IS: [4.10-2a] and [4.10-2a].

UTILITIES AND SERVICE SYSTEMS

Would the project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Less Than Significant Impact

Discussion of Impacts

Refer to Appendix D (Project Details) of the EA/IS

Mitigation Measures

Not applicable

WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No Impact

Question	CEQA Determination
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

MANDATORY FINDINGS OF SIGNIFICANCE

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

Discussion

(a) Refer to sections 3.5.2, 3.12.2, and 3.13.2 and of the EA/IS

(b) Refer to Chapter 4 of the EA/IS

(c) Refer to Chapters 3 and 4 of the EA/IS

Appendix B – Public Scoping Materials

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

PUBLIC SCOPING MATERIALS

Public scoping for the Oregon Gulch Project was initiated on October 22, 2020 and ended on November 23, 2020. At the onset of the public scoping period, notices informing the public of the intent to begin the environmental review process were posted on the TRRP and Reclamation websites and at the TRRP Weaverville and BLM Redding Field offices. Hardcopy scoping notices were also mailed and emailed to local landowners and interest groups.

The TRRP hosted a virtual scoping meeting on November 5, 2020, to outline the proposed project and receive public input. During the meeting, the public asked 16 questions. The meeting agenda and a summary of the questions asked by the public along with responses provided by TRRP, Reclamation, BLM, and the project design team.

Presentation slides and a recording of the November 5, 2020, scoping meeting is available online at https://www.trrp.net/calendar/event/?id=11685. This appendix includes the scoping notice, scoping meeting agenda, and questions and responses.

Proposed Oregon Gulch Channel Rehabilitation Project In-River Construction Proposed for 2022

Project Background

The Trinity River Restoration Program (TRRP) and the Bureau of Land Management (BLM) Redding Field Office are beginning the 30-day public scoping period for the Oregon Gulch Channel Rehabilitation Project and are requesting input and participation at the upcoming public meeting, by mail or by email.

Oregon Gulch project area

The U.S. Department of Interior (DOI) established the TRRP in 2000 with the goal of restoring the fisheries of the Trinity River affected by dam construction and related water diversions of the Trinity River Division of the Central Valley Project[1]. Baseline ecological conditions of the Trinity River at the time the TRRP was established also reflected the effects of past mining and timber harvesting in the watershed. These effects are the target of the Program's restoration activities.

Administered by the U.S. Bureau of Reclamation (Reclamation), the TRRP is a partnership of federal and state resource agencies, tribes, and Trinity County. The Program's objective is to restore the processes and attributes of an ecologically functioning river system, which should in turn recover diminished salmon and steelhead populations while retaining Trinity and Lewiston Dams' deliveries of water and power to California's Central Valley.

There are five primary components of the TRRP's river restoration work:

1. ***Variable annual instream flows***: releasing water from Lewiston Dam (based on forecasted water availability for the Water Year type) to mimic natural Trinity River conditions and to maintain and interact with downstream areas to enhance conditions for all life stages of fish and wildlife.
2. ***Channel rehabilitation***: restoring the functional floodplain of the river, which has been channelized and simplified by managed river flows and mining.
3. ***Sediment management***: reintroducing gravel (aka coarse sediment) to the river and controlling fine sediment input from upslope areas. Gravel needed for spawning and habitat diversity is blocked by the dam, and moves downstream during high-flow events. The reintroduction of gravel will improve fish and macroinvertebrate habitat.
4. ***Watershed restoration***: addressing negative impacts that have resulted from poor land management in the basin. Watershed restoration activities include decreasing the input of fine sediment from Trinity River tributaries and increasing aquatic habitats.
5. ***Adaptive management***: monitoring, evaluating, and improving the effectiveness of river restoration actions.

[1] https://www.usbr.gov/mp/cvp/

- 1 -

As part of its continuing Trinity River restoration efforts, the TRRP proposes to construct the Oregon Gulch Channel Rehabilitation Project near Junction City, California. The TRRP will complete an Environmental Assessment/Initial Study (EA/IS) to meet the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The NEPA effort will be led by Reclamation and the BLM Redding Field Office, and the CEQA effort will be led by the North Coast Regional Water Quality Control Board. The EA/IS will evaluate and disclose the potential environmental effects of implementing the Oregon Gulch project. Reasonable alternatives that could satisfy the intent of the proposal will be analyzed if they are determined to be feasible. At minimum, the EA/IS will analyze the effects of the Proposed Action (the Oregon Gulch project) and a No Action Alternative.

Rearing habitat for young salmon and steelhead after TRRP project construction

The purpose of this notice is to invite you to contribute to the NEPA/CEQA process for the Oregon Gulch project by providing comments, suggestions, or concerns you may have about the project during the public scoping period, pursuant to 40 CFR § 1501.9[2]. To encourage your informed participation, this scoping notice includes a general description of the Proposed Action and the purpose of and need for the project.

Oregon Gulch Project Goals and Objectives

The Oregon Gulch project is designed to improve the overall functioning of the restoration area. The completed project would:

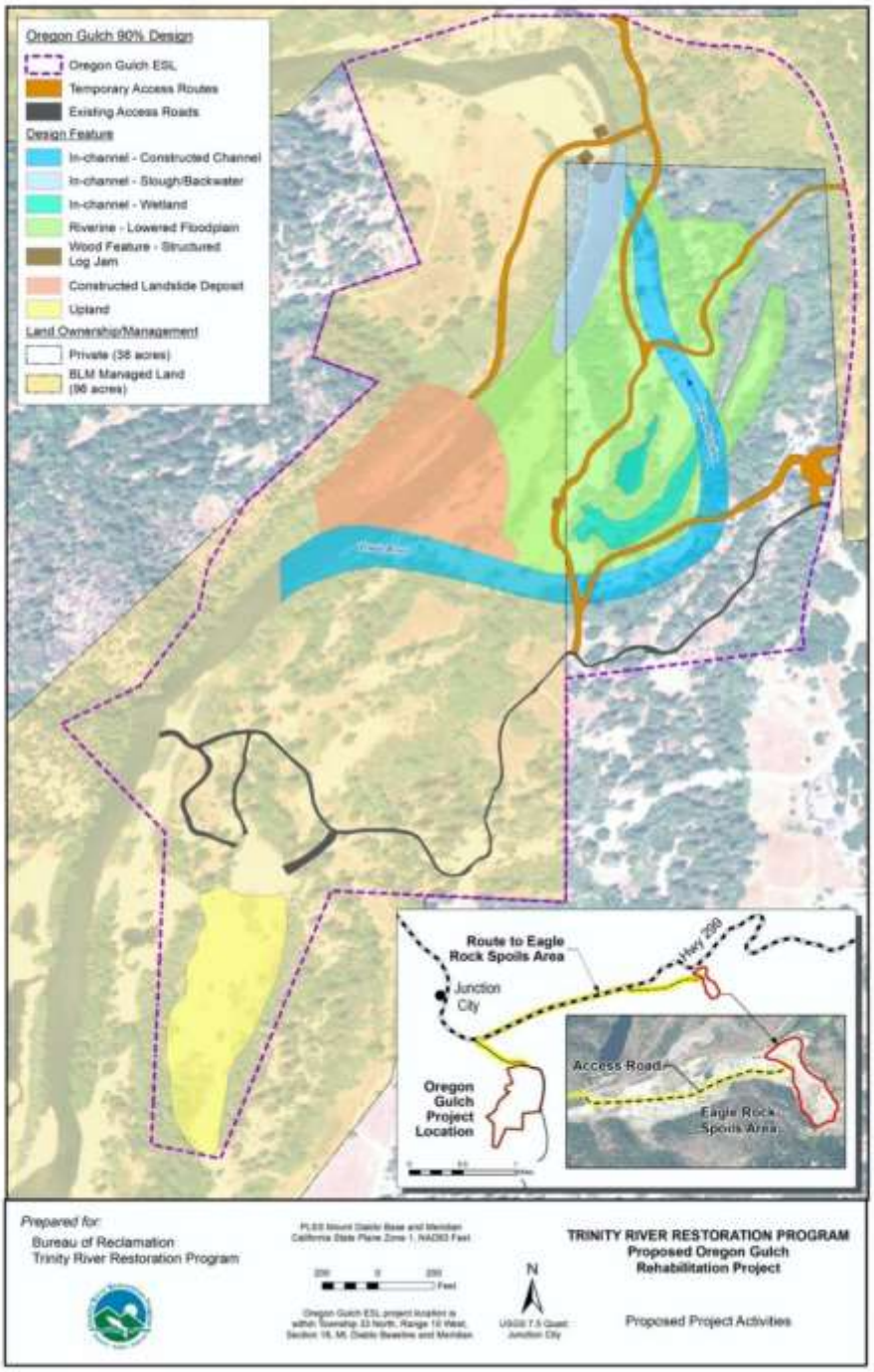
- Reestablish a functional, topographically complex floodplain to promote dynamic river processes, increase river connections, and create juvenile salmon and steelhead habitat at a greater range of flows.
- Increase in-channel habitat diversity under all flows by placing wood in the river to interact with river flows, provide cover for fish, increase channel complexity, and allow for increased groundwater retention.
- Revegetate construction-disturbed upland and riparian habitats to restore native plant diversity and fish and wildlife habitat, and provide future trees for recruitment to the river.

Oregon Gulch Channel Rehabilitation Project Description

The proposed Oregon Gulch project spans approximately 134 acres upstream of Junction City between river miles (RM) 80.9 and 81.7. Equipment access to the Oregon Gulch project area would be via Sky Ranch Road on river right. Access to river-left construction areas would be made by crossing the river from river right. About 96 acres of the area included in the project footprint is managed by the BLM Redding Field Office. The remaining 38 acres consists of several privately owned parcels along the eastern extent of the project area. The figure below shows the proposed Oregon Gulch project activity areas.

[2] Council on Environmental Quality (CEQ) National Environmental Policy Act Implementation Regulations. 40 CFR Parts 1500–1508 (2020).

Oregon Gulch Project Location and Proposed Project Activity Areas



Proposed Project Activities

To achieve the goals and objectives of the Oregon Gulch project, TRRP proposes the following project activities:

Mining waste (tailings) at the proposed Oregon Gulch project area

- Removing up to 500,000 cubic yards of mining waste from the site, which would dramatically increase riparian habitat on a valley-wide scale;
- Placement of wood and reduction of channel-stabilizing vegetation, which would improve dynamic riverine processes;
- Lowering floodplains and creating a high-flow channel, which would promote broad vegetated areas away from the river's banks;
- Excavating to create new side channels and in-channel pools for immediate habitat that would evolve over years of seasonal flooding;
- Placement of large wood features, including log jams, which would provide immediate cover for fish and interact with river flows to scour and maintain function;
- Construction of a river-left landslide deposit, which would encourage the channel to meander toward the right while allowing for adjacent floodplain areas to create slow-water juvenile fish habitat; and
- Vegetation planting and amending of soils in riparian and upland vegetation zones to increase use by wildlife and improve aquatic habitat conditions.

Possible Local Disturbances

- Up to 500,000 cubic yards of historic mine waste (tailings piles) would be excavated and moved off the project site to the Eagle Rock quarry, located approximately 3.7 miles east of the Oregon Gulch project area via Sky Ranch Road and State Route 299.
- Highway-legal haul trucks would make deliveries of equipment, large wood, plants, and other needed materials during work hours using existing roads. An estimated 29,000 truck loads would be required to remove mining waste. Hauling the mine waste over an 18-month period would require about 75 dump trucks a day travelling between the Oregon Gulch project area and the Eagle Rock quarry.
- Nearby residents may experience noise commensurate with the use of haul trucks and heavy construction equipment, such as dozers and excavators.
- Drivers would experience traffic delays from pre-construction and construction activities, including mine waste hauling and potential road improvements to support truck traffic.
- Minimal tree and vegetation removal would occur. Trees removed for project activities would be used to construct the project's large wood features, reducing the need for off-site timber.

Proposed Oregon Gulch Project Schedule

- Public Scoping: October 22–November 23, 2020
- Public Scoping meeting: November 5, 2020
- Draft EA/IS for public comment: Winter 2020/21
- Final EA/IS and Final Decision: Spring 2021
- Proposed project construction: Trucking of mine waste to the Eagle Rock quarry as early as spring 2021 to spread out the required truck trips. Summer 2022 for in-river construction.
- Post-construction revegetation and maintenance: As needed

To Comment on the Proposed Oregon Gulch Project:

- *Attend* the **Virtual Public Scoping Meeting** on Thursday, November 5 at 6:00 PM. The link to the meeting will be available at https://www.trrp.net/calendar/event/?id=11685.
- *OR* send your comments via **mail** by November 23, 2020, to:
  Oregon Gulch Project Scoping
  C/O TRRP
  P.O. Box 1300
  Weaverville, CA 96093
- *OR* send your comments via **email** by November 23, 2020, to fgutermuth@usbr.gov.
- Only comments *postmarked or emailed by November 23, 2020,* will be fully considered by the agencies' interdisciplinary team to meet the project's NEPA timeline per DOI Secretarial Order 3355.

How to Participate in the Oregon Gulch Project Scoping Process

The TRRP and BLM are seeking information or analysis related to the Oregon Gulch project. All comments submitted via mail, email, or at the public meeting will be considered. Full citations for referenced literature are requested to ensure and expedite their retrieval. After the scoping comment period, the interdisciplinary team will review the scoping comments and determine key issues.

- Project information and updates are available at: https://www.trrp.net/restoration/channel-rehab/sites/oregon-gulch-channel-rehabilitation-page/.
- A virtual public meeting will be held Thursday, November 5, 2020, at 6 pm. Members of the public are invited to join the meeting through a link posted on the project page at https://www.trrp.net/calendar/event/?id=11685.
- Send your comments via mail or email to the address above or provide verbal input at the virtual public meeting.
- For mail and email submittals, please include Oregon Gulch Project Scoping Comment in the subject line and the following information:
  - Your name and address (telephone number and email address are also suggested)
  - Site-specific comments about the Proposed Action along with supporting information that would help identify issues, develop alternatives to respond to those issues if necessary, or predict the environmental effects of the proposal
- Comments received, including comments submitted at the virtual public meeting, will be considered part of the public project record for this proposal and will be available for public inspection.
- This project supports the objectives of the Redding BLM Resource Management Plan. This project is not a fuel reduction project as defined by the Healthy Forest Restoration Act of 2003.

Trinity River Restoration Program

— BUREAU OF —
RECLAMATION

- 5 -

Trinity River Channel Rehabilitation Site: Oregon Gulch
Proposed Project and Public Scoping Meeting
Thursday, November 5, 2020 – 6:00-8:00 pm
Virtual Public Scoping Meeting
MS Teams Link

AGENDA

6:00 PM	**Meeting Guidelines:**	Emily Thorn, Ironwood Consulting (5 min)
6:05 PM	**Introduction:**	Mike Dixon, Executive Director (15 min)
	▪ Purpose of this meeting	
	▪ Introduction of the Program Partners	
	▪ Trinity River Restoration Program (TRRP) Background	
	▪ Objectives: Overall and Proposed Project	
6:20 PM	**Oregon Gulch Project Description:**	Dave Gaeuman, Designer (15-30 min) Kyle De Juilio, Fisheries Biologist
6:45 PM	**Environmental Compliance:**	Brandt Gutermuth, Env. Scientist (10 min)
	▪ Lead Agencies	
	▪ Schedule	
	▪ How to submit questions or comments/input	
6:55 PM	**Discussion - Question/Answer period** (up to 1 hour)	

Copies of Oregon Gulch public scoping notice are available for review on the TRRP website at: https://www.trrp.net/restoration/channel-rehab/sites/oregon-gulch-channel-rehabilitation-page/.

Contact information:

Brandt Gutermuth (Environmental Scientist)	530-623-1806	fgutermuth@usbr.gov
Kevin Held (Public Outreach Coordinator)	530-623-1809	kheld@usbr.gov

MS TEAMS VIRTUAL MEETING INFORMATION

Join via web using MS Teams on your browser:
MS Teams virtual meeting link

Attendees can join by selecting the meeting link above and your web browser should automatically open, and you will be prompted to use the MS Teams app or your web browser. Choose whichever method you prefer. You'll see different instructions based on how you join the event (from the Teams app or through your web browser).

Participating in the Live Event

Because your microphone and camera will not be available to you for the live event, the only way you can communicate with the presenters or other attendees is to use the Q&A panel.

Using the Q&A Panel

To open the Q&A panel, select the Q&A button found on the upper, right side of the screen.

To ask a question, type your question in the compose box (located at the bottom of the panel), and then select the Send button or icon. If you want to ask your question anonymously, select "Post as anonymous."

Table B-1. Scoping Meeting Comments and Summarized Responses

Commentor	Question/Comment	Summarized Responses
Eric Reiland	Have you tested/assayed the tailings piles for residual placer gold deposits?	We have not tested the tailings for gold, although we do assume there is some gold there. Eagle Rock would gain the benefit when they are processing the tailings.
Anonymous	What is the total estimated cost of the project? Tailings removal, property costs, actual restoration costs, etc?	We're still in very preliminary stages of the project, and have not yet conducted environmental analyses, which will inform exactly what needs to be done. For now, we have rough estimates that the entire project will cost about $10 million, with about $4 million of that being the cost of moving the tailings to Eagle Rock.
Eric Reiland	I thought I heard different design parameters for your project's bankfull discharge. I may have misunderstood, but it sounded like the new channel will access its floodplain at 600 cfs, but annually the channel has flows that exceed 1200 cfs. Please clarify, thank you.	That's correct, the channel is designed to overflow at 600 cfs. The intention is to inundate the floodplain over the winter to create habitat. The notion of bankfull discharge doesn't really apply here; we're interested in flooding as much as we can when the fish are there.
Anonymous	The tailings have been at the current location since the early 1900s, approximately 50-60 yrs pre dam and 50-60 yrs post dam. There have been many fish runs, both very strong and not so strong. The tailings appear to be almost "natural" since they have been in place so long. Why the desire to remove what appears to be a "natural" structure?	The tailings are a relic of human disturbance on the landscape, and are therefore not natural, but rather manmade. These gravel dunes wouldn't naturally form without human actions and furthermore they are confining the channel and creating un-natural conditions. We need to find a way to create large salmon runs, and removing the tailings will achieve that. The tailings are prohibiting the river from recovering the valley, because they stop the river from moving into the area during those large flow events. That's why restoration has been proposed-- so the river can recoup itself. We are trying to restore the natural process.
Anonymous	What is the total estimated length of the project? (interpreted to be in reference to schedule, not river miles)	The timeline is somewhat contingent upon additional funding; if the tribal funding comes through it will be a two year project, if not it will take about three years to move the tailings.
Anonymous	Will a traffic study be conducted due to the increased number of trucks?	The impacts of the trucks will be analyzed in the environmental impact study. However, other types of traffic studies won't be required given the project scope.
Anonymous	If the tailings get removed, what kind of flow or energy will be in the river in the project area?	Once the tailings are gone the flow will spread out and decrease the shear stresses. We expect (we've done some modeling) to see some of the river bank materials to peel off the upstream area and get redeposited on the valley grade. These are among the fluvial processes we're interested in creating.
Anonymous	What level of flows will be required to create the desired "floods" to create beneficial habitat for salmon and steelhead?	600-800 cfs events will flood the floodplain causing a dramatic increase in habitat (expected mid-late January through June). As the water level gets deeper, around 1000-2000 cfs, the water will start moving faster. Once the willows and cottonwoods mature the water will slow down a bit.

Commentor	Question/Comment	Summarized Responses
Anonymous	Is the property where the project will potentially occur private or public?	The project area includes a mix of public and private lands. Approximately 70% is BLM-owned public lands, and the rest is private land recently purchased by the Yurok tribe for the purpose of this project.
Anonymous	After tailings are removed, how long will the restoration portion of the project take (ie how many years)?	The heavy rehabilitation work will take one summer to complete, and then natural changes will start happening immediately. A flood event will cause geomorphic changes and new vegetation will begin appearing quickly. Full restoration and maturation of the site will occur when larger trees like willows and cottonwoods are established, in about 20-30 years.
Eric Reiland	Are you proposing an aggressive revegetation plan for the floodplain or are you looking for natural plant recolonization of the disturbed areas?	The TRRP has an obligation to mitigate any impacted riparian vegetation, but as part of the design we are relying on natural revegetation. We don't plan to irrigate or dictate where plants should go-- we want the plants to grow where they want. It's impossible to predict where deposition will occur. However, we do anticipate some planting in the upland areas and we will also transplant some willows.
Anonymous	Is there any chance the dam will get removed down the road and just fix this problem on its own?	The dam has been in place for about 60 years. Although it would be beneficial for the fish to remove the dam, it is a key component to local agriculture, water resources and power. The impacts to the local economy would be so great that removal is not likely
Anonymous	If there are multiple channels within the flood plain, what will be the effect of the main channel for adult returning fish?	There will always be a flowpath for the adult fish to return. The primary objective for this project is to spread the river out to help restore the juvenile fish populations, however there will be no problem for adult fish to migrate through the channel. It will likely take a few years and a lot of high water events to create the holding pools that will help adults develop, but it will happen over time.
Anonymous	I missed the beginning of the presentation so I may have missed the answer to this, but is selling the tailings to fund the project, at least partially, an option?	Because the magnitude of the project is so big, we need to come up with innovative ways to move the material. Right now the plan is to move the tailings to the Eagle Rock spoils area, and we are working with them to determine how we can receive some payment back. For instance, Eagle Rock could provide road base and crushed rock for our project road repair and sorted rock for the project. Note: When the Yurok tribe purchased the land it was stipulated that any money made from the tailings would be applied to restoration.
Anonymous	Will IC 1 channel be the new main channel or will there still be a natural mainstem channel in addition to the new channel?	The IC1 will remain as the only channel when the equipment leaves the site. The channel will be intentionally undersized so it will flood, but it will remain the main channel.

Commentor	Question/Comment	Summarized Responses
Anonymous	It appears all restoration projects are focused on juvenile habitat. What projects are scheduled to support adult holding areas, as many traditional deep holding locations in the upper river have filled in with TRRP gravel augmentation?	It's the perspective of the restoration program, informed by current science, that juvenile fish habitat is the main limiting factor for recovering fish populations. Adult salmon return to spawn and die, and their holding habitat is not limiting the amount of fish. The bottleneck in the system is juvenile habitat. We do recognize that there was an issue with deep holes filling in, but in some cases the implementation of flow releases has caused the sand to move downstream. There has been an evolution in our understanding, and we are learning ways to stop this problem.

Appendix C – Comments on Public Draft EA/IS and TRRP Responses

To be included in Final Draft.

Appendix D – Project Details

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

The Proposed Action is described in Chapter 2 of the Oregon Gulch Environmental Assessment/Initial Study (EA/IS). All figures cited in this appendix are in the EA/IS. This appendix provides additional details for the Proposed Action.

This page intentionally left blank

TABLE OF CONTENTS

Appendix D – Project Details D-1

1. Design Context D-1

2. Design Objectives D-2

3. Design Elements D-3

3.1 Riverine Construction – Lowered Floodplains, Large Wood Structure D-4

3.2 In-Channel Construction (IC) – Channel, Slough, Wetlands, and Large Wood Structures D-5

3.3 Upland (U) – Constructed Landslide Deposit and Upland Spoils D-7

3.4 Wood Features – Structured Log Jams (SLJ) and Wood Placement (WP) D-8

3.5 Contractor Use Areas (C) D-10

3.6 Access Routes D-10

3.7 Design Constraints D-11

4. Rehabilitation Activities D-11

4.1 Recontouring and Vegetation Removal D-11

4.2 Sediment and Gravel Placement D-12

4.3 Wood Placement D-13

4.4 Revegetation Activities D-14

4.5 Construction Methods and Schedule D-16

5. Environmental Commitments D-17

6. References D-17

LIST OF TABLES

Table D-1. Riverine Construction Activity Area Descriptions D-5

Table D-2. In-Channel Construction Activity Area Descriptions D-6

Table D-3. Upland Construction Activity Area Descriptions D-8

Table D-4. Sediment Material Types and Size Classes for Construction of IC Features D-12

Table D-5. Cut and Fill Material Types and Quantities Required at Each Activity Area D-13

1. Design Context

The environmental conditions and highly modified nature of aquatic, riparian, and upland habitat within the Oregon Gulch environmental study limit[1] (ESL) presents a unique opportunity to reshape the channel geometry in this reach of the Trinity River, increase floodplain connectivity, reintroduce large wood, and increase the overall complexity and functionality of the habitat for fish and wildlife species.

The Oregon Gulch project design incorporates input from an independent value engineering (VE) study and numerous consultations between the Trinity River Restoration Program (TRRP) and other design team members. The Hoopa Valley Tribe Design Group prepared a design report that incorporated input from consultants and the TRRP design team into the rehabilitation site's design (HVT 2020). The design report includes existing conditions at the project site as well as an evaluation of future desired conditions. Copies of the VE study and Design reports are available on the TRRP data portal at http://odp.trrp.net/. The design allows for immediate and dramatic improvements in juvenile salmonid habitat by introducing large areas with suitable flow depth, velocity, and cover. Riparian ecosystem health and floodplain connectivity are addressed throughout the project site. The design is intended to stimulate geomorphic processes that will drive the evolution of a structurally diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions.

The proposed Oregon Gulch project relies on removing tailings to free the valley floor. The magnitude of the disturbance to the site from historical gold mining cannot be overstated. Mining debris washed off the hillslope during upslope hydraulic mining burying the historical valley bottom, and subsequent dredging coupled with fluvial incision left a narrow, canal-like channel with almost no functional floodplain area. The result is a section of the river with extremely poor salmonid rearing, spawning, and adult holding habitat, including a pronounced dip in rearing habitat capacity at flows between 450 cubic feet per second (cfs) and 1,800 cfs.

The Oregon Gulch project design incorporates elements of the stage-zero restoration concept described by Cluer and Thorne (2014) into the more familiar concept of an anastomosing (or braided) channel system consisting of several stable channel anabranches separated by vegetated islands (Knighton 1998). The stage-zero concept refers to a stream condition in which a network of small channels inundates the adjacent floodplain and wetlands at relatively low and frequent discharges (about 600 cfs), providing greater ecological benefits than a single large stream channel. The stage-zero concept has been implemented at various projects in the Pacific Northwest by creating a geomorphic grade surface that spans the valley width and has a longitudinal slope defined by the elevation of hydraulic controls at the upstream and downstream ends of the project reach (Powers et al. 2019). This approach is well-suited to low-slope areas where valley and floodplain connectivity can be restored to promote longitudinal and lateral sediment deposition. The Oregon Gulch project site is well-suited to this approach due to its low slope, wide valley (accessible with tailings removal), and stable geomorphic control near the Oregon Gulch confluence. However, the necessity to maintain boat passage precludes implementing a true stage-zero design, so the final design for the project incorporates elements of a large amplitude meander (LAM)

[1] The Environmental Study Limit, or ESL, is the anticipated geographic limit of project activities, with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/construction areas, project activity areas include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of pre-construction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized as determined appropriate for local conditions, based on data available at the time of its development, including wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.

rehabilitation design focused on increasing sinuosity through the reach by extending the length of the main channel. The LAM rehabilitation design for the Oregon Gulch project includes side channel and high-flow channel creation through the existing tailings ponds as well as extensive tailings lowering to encourage riparian growth.

In addition to greatly significantly increasing juvenile habitat availability at flows typical of the winter fry-rearing period, the Oregon Gulch project design is intended to stimulate geomorphic processes that will drive the evolution of a structurally diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions. As discharges increase to magnitudes capable of transporting appreciable volumes of sediment, flow divergence in the valley grade area is expected to result in the deposition of sediment and woody debris in some floodplain locations. At the same time, overbank flows are expected to become concentrated in specific areas, leading to localized scour. When coupled with aggradation within the constructed channel, these processes have the potential to produce avulsions and the incision of new channels into the floodplain surface. In summary, the designed low-flow channel is not intended to be a stable or static feature. Temporary effects on low-flow navigation at certain times of the year are possible, depending on geomorphic evolution.

2. Design Objectives

The TRRP identified the Oregon Gulch site as having high potential for rapid and dramatic improvement in juvenile salmonid rearing habitat. The purpose of the project is to advance one of the primary TRRP objectives, which is to mechanically reshape and scale the current channel form to interact with the contemporary flow regime, reestablishing physical processes that would create and maintain fish habitat.

The general project objectives are to increase rearing habitat across all flows, eliminate the rearing habitat dip below bankfull flows, increase the functional floodplain area, and increase topographic and hydraulic complexity throughout the site. The project site is located just below the Sheridan Riffle, which has the highest density of natural spawning in the restoration reach. Therefore, it is important to maximize the rearing habitat gains at the project site to enhance the growth and survival of the fry produced at the Sheridan Riffle immediately upstream.

The specific design objectives are as follows.

Physical (Geomorphic/Flow)

- Remove tailings piles from a riverine valley bottom area spanning 16.8 acres.
- Increase the extent and frequency of floodplain inundation.
- Promote fluvial processes, such as bedform dynamics and channel planform change.
- Reduce wood storage deficit (wood structures and standing inventory).

Biological

- Ensure that habitat availability continuously increases as discharge increases above baseflow.
- At a minimum, double rearing habitat capacity across the range of frequent discharges during the period when juvenile salmon are present in the river (350–4,000 cfs).
- Increase recruitment and production of allocanthous spawning gravel within the aquatic ecosystem.
- Enhance existing native amphibian habitat.

- Create seasonal surface water connection to off-channel habitats.

Riparian

- Minimize impacts to existing multi-story riparian vegetation and cottonwoods.
- Increase riparian vegetation biomass and abundance in the tree, shrub, and herb layer along design features compared to existing conditions.
- Increase the number of trees (especially cottonwood) that could supply logs over 24 inches in diameter to the river.
- Increase native species richness and abundance.

3. Design Elements

This section describes the discrete activity areas incorporated into the Proposed Action. The activities proposed for these areas are based on those described and analyzed in Section 2.3.2 of the Master Environmental Impact Report (EIR)[2] (North Coast Regional Water Quality Control Board [Regional Water Board] and Reclamation 2009). Figure 2-1 of the EA/IS for the Oregon Gulch project shows the locations where design elements are proposed and where rehabilitation activities would occur.

Activity areas identified:

- Riverine (R): areas at elevations above the active river channel's bed and bank at low flow (450 cfs)
- In-channel (IC): wetted areas within the active low-flow river channel
- Upland (U): land lying above the 100-year flood level where normal inundation occurs
- Contractor use (C): areas for temporary construction staging and access; and

The depicted activity areas cover the maximum range of work that might be completed (the worst-case scenario). The actual disturbance footprint would typically be smaller than that depicted in the EA/IS figures. In support of the construction process, temporary access routes and stream crossings would be used. Structured log jams (SLJs) and wood placement (WP) are also included as discrete activity areas, although they may coincide with other riverine and in-channel activity areas. In addition, multiple contractor use areas connecting activity areas would allow the contractor the flexibility to choose where and how it would complete work in the most efficient and least impactful manner based on real-time conditions (e.g., to avoid nesting birds or previously planted areas). Activities in riverine and in-channel areas would typically occur during the in-channel construction window authorized by the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the Regional Water Board[3].

[2] The 2009 Master EIR can be found at https://www.trrp.net/library/document/?id=476.

[3] The in-river work window has been expanded to July 15 through October 15 in order to protect all life stages of threatened fish while ensuring that the TRRP is efficient in completing projects that have been initiated. In agreement with the NMFS, Best management practices that are protective of all native anadromous fish and their habitats are required after September 15.

Riverine areas are labeled with an R preceding the site number (e.g., R-1), upland areas are labeled with a U (e.g., U-1), in-channel work areas are labeled with an IC (e.g., IC-1), in-channel wetland areas are labeled with a W (e.g., W-1), construction staging/contractor use areas are labeled with a C (e.g., C-1), access roads are labeled with an A, structured log jams are labeled with an SLJ, and wood placement areas are labeled with a WP. These labels are used throughout this appendix.

3.1 Riverine Construction – Lowered Floodplains, Large Wood Structure

Three lowered floodplains (R-1, R-2, and R-3) are separate sections of a single larger valley grade concept that is the foundation for stage-zero restoration design; these floodplains would be constructed to be inundated and function at flows ranging from about 600 to more than 7,000 cfs. Activities associated with constructing these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the channel's surface area that could be inundated by reoccurring flows below the ordinary high-water mark (i.e., 6,000 cfs). Vegetation would be cleared as necessary, and earth would be excavated to meet design elevations for periodic inundation. **Error! Reference source not found.** shows the proposed activities at each of the riverine construction areas.

Together, R-1, R-2, and R-3 represent approximately 16.8 acres of new floodplain that would provide high-quality juvenile rearing habitat at discharge levels that are frequently exceeded during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 334,600 cubic yards of mine tailings. A large wood structure at WP-1 would bifurcate overbank flow streamlines, creating hydraulic variability and local scour and deposition. Interactions between WP-1 and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could take the form of a vegetated island between two channel anabranches.

Due to their low elevation and large width, the R-1, R-2, and R-3 floodplains are expected to be depositional in some areas and experience scour in other areas. Deposition is expected to be the dominant geomorphic process in the upstream third of R-1, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-2 and R-3, whereas scour is unlikely in those areas due to their positions along the right valley margins. The low elevation of the valley grade surface will also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

Table D-1. Riverine Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
R-1	Lowered floodplain	A lowered floodplain that extends about 1,270 feet longitudinally and about 850 feet laterally at its widest point and encompasses 12 acres. R-1 is separated from R-2 and R-3 by the designed main river channel (IC-1), located along its right edge. The area spanned by R-1 currently contains at least four long ridges of tailings.
R-2	Lowered floodplain	R-2, the smallest of the three sections at 1.4 acres, occupies the footprint of an existing tailings pile about 560 feet long and 100 feet wide on the right side of the valley. Removal of that pile would connect existing depressions on either side of it that are at elevations near the design valley grade.
R-3	Lowered floodplain	R-3 spans 3.4 acres of existing tailings piles between the designed main river channel and some existing depressions in the downstream right corner of the project site.
WP-1	Large wood structure	The trunk and rootwad of a large cottonwood tree on the project site must be removed to accommodate necessary excavation that would be used to form the core of the WP-1 structure. The structure would incorporate additional wood and about 150 cubic yards of coarse fill. This structure is intended to increase hydraulic roughness and topographic and ecological diversity on the R-1 floodplain.

3.2 In-Channel Construction (IC) – Channel, Slough, Wetlands, and Large Wood Structures

The project would include a meander channel complex consisting of a channel (IC-1), a slough (IC-2), and wetlands (W-1 and W-2). Large wood placement would occur throughout the Riverine zone and as a habitat structure at WP-1. Structure log jams would be constructed (SLJ-1 and SLJ-2) at the downstream end of the project. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. Construction of this complex would increase channel length, complexity, and sinuosity and would also increase slope in this section of the channel to facilitate boat passage. Table D-2 outlines the in-channel activities that would occur under the Proposed Action. Excavation of the IC-1 channel would require 181,900 cubic yards of excavation.

The meander complex would provide a diversity of water depths and velocities across a wider range of flows than the existing mainstem channel configuration. Activity area IC-1 would form the meander channel with the two adjacent wetlands (W-1 and W-2) and a slough with a medial bar (IC-2) that would hold slackwater at flows below 600 cfs. Flows greater than about 600 cfs would spill over the channel banks and inundate the R-1 floodplain, generating large increases in wetted area and rearing habitat availability as flows increase through the range of flows typical of the period when juvenile salmon are in the river. The delta area has been losing vegetation due to scour and natural erosion and currently exhibits a single thread low-flow channel. Historically, this area has had more diversity, splitting the flow into two or three channels. The meander complex, wetlands, slough, and wood structures would restore some complexity and promote a dynamic channel morphology.

Spreading the flow over a wide area would greatly reduce unit stream power and sediment transport capacity in the R-1 area. Sediment deposition is expected on all three floodplain features, especially in the upstream half of

R-1 and within the IC-1 channel itself. Deposition on the channel bed could further reduce channel capacity, forcing more water onto the floodplains. Simultaneously, irregularities in the floodplain surface could cause the flow to concentrate into defined flow paths that evolve into alternative channels. The net results could range from avulsion of the channel to a new location on the floodplain to the formation of a branching delta-like channel network. The precise outcome cannot be accurately predicted, but the as-built terrain is, by intention, almost certain to evolve dynamically in the years following construction.

In-channel construction includes activities that would occur in the river under base flow conditions (e.g., 450 cfs) during the in-channel construction window (July 15 to October 15). After September 15, Best management practices would be in place to minimize impacts to adult coho and Chinook salmon. The construction of various types and sizes of grade control structures, including construction or excavation of alluvial features (e.g., sloughs, wetlands), would increase channel complexity through promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of depositional features (e.g., riffles, bars, and islands) available for spawning and rearing habitat.

During construction of in-channel activity areas, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river or they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem river post-construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and would ensure that water quality permit requirements are met (e.g., no more than 20 nephelometric turbidity units (NTUs) at 500 feet downstream of construction).

Table D-2. In-Channel Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
IC-1	Channel	The bottom of the channel would be set to an elevation 3 feet below the adjacent R-1 floodplain surface elevation throughout its length to facilitate a gradient suitable to boat passage. The slough would cover about 7.1 acres. The channel would be relatively wide at its upstream end, with a bottom width of about 95 feet and a top width as large as 200 feet. This portion of the channel is intended to efficiently convey flow through a bend to the right forced by the U-2 constructed landslide deposit to help mitigate the potential for the bend to create backwater conditions further upstream. Upon reaching the right edge of the R-1 floodplain and bending to the left to flow straight down-valley, the channel gradually narrows to bottom and top widths of about 50 feet and 70 feet, respectively. Together with this low slope, the narrow downstream section limits the discharge conveyed through the R-1 area to about 600 cfs.

Riverine Construction Area	Feature Type(s)	Description
IC-2	Slough	The slough would occupy a 600-foot-long section of the pre-existing river channel downstream from the U-2 constructed landslide deposit. This section of the channel, which covers about 1.9 acres, would be partially filled with about 5,050 cubic yards of clean gravel and cobble to construct a diagonal bar that crosses the slough from right to left and supplied with large wood and slash. The slough would contain slackwater when mainstem flows are less than about 600 cfs, with hyporheic flow from Mill Creek on the downstream flank of the U-2 landslide deposit and through the base of U-2. At flows greater than 600 cfs, the slough would receive discharge conveyed across the R-1 floodplain. At lower discharges, the bar within the slough decreases the channel cross-section compared to the pre-project cross-section so that the velocity of through-flow is increased. On the other hand, at somewhat higher discharges, the diagonal bar functions as a hydraulic control that limits flow velocities. As a result, the slough would maintain flowing water with velocities suitable for juvenile Chinook rearing (<2 feet per second) over at least half its area at flows up to 4,000 cfs.
SLJ-1 SLJ-2	Large Woody Debris Structures	The structures' location would encourage temporary and long-term wood recruitment for racking and wood storage in the system.
W-1 W-2	Wetland	Wetlands W-1 and W-2 are features that already exist on the landscape. W-1 currently consists of a shallow wetland covering about 1 acre, and W-2 is a 0.35-acre deep water pond. These two wetland features would be left intact to preserve over-summer salmon rearing habitat and habitats used by frogs, turtles, and other riverine species. Both wetland features are surrounded with desirable vegetation that would also be preserved as much as possible. The current design calls for the existing wetland at W-1 to be connected directly to the IC-1 channel at its downstream end, whereas the pond in W-2 would have a surface water connection to the main channel only when discharge exceeds 600 cfs. The edges of the wetland areas could be enhanced with wood and rock placement. Before construction begins, wood from on- and off-site could be placed within the wetlands to preserve the material from heat and dry conditions to be ready for use in the WP and SLJ features.

3.3 Upland (U) – Constructed Landslide Deposit and Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in an upland area (U-1) as fill on terraces formerly subjected to a variety of placer mining activities and in a constructed landslide deposit area (U-2) that would divert the river from its existing channel into the new IC-1 alignment along the right margin of the valley, as described above. The U-2 area would cover 6.7 acres and require a net fill of about 41,000 cubic yards. U-1 would accommodate approximately 143,000 cubic yards of excavated material. Table D-3 shows the activities that would take place at each upland activity area.

Upland activity areas have been located to ensure that there would be no increase in the elevation of the 100-year floodplain, consistent with requirements of Trinity County's Floodplain Ordinance. These activity areas would be used to place excess material excavated during construction of the riverine and in-channel activity areas. The boundaries of these fill areas were defined using a Federal Emergency Management Agency (FEMA) approved modeling process; field verification by surveyors and engineers was performed to ensure these areas would be located at an elevation above the FEMA 100-year floodplain. Within these activity areas, the depth of fill would range from about 1 foot near the edge to as much as 35 feet, depending on the activity area's size and location. Fill materials would be spread in uniform layers that would blend in with the natural terrain and provide stable slopes for revegetation.

Table D-3. Upland Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
U-1	Upland Spoils	Primary spoils (or tailings) area could be used to provide coarse material (greater than ⅝-inch) for in-channel features and the constructed landslide deposit in U-2. Fine material excavated from the ESL would be spoiled here and planted with native vegetation.
U-2	Constructed Landslide Deposit	Would consist of a large mound of well-graded alluvium on top of the pre-existing channel alignment that rises gradually from river level at the upstream edge of the R-1 floodplain to about 1,480 feet at its crest. Only floods larger than 16,850 cfs (about the 8- to 10-year event) would overtop it. The crest would have a leeward slope with a ridge approximately 200 feet wide projecting to the north. The shape of the crest and lee slope is such that flow during rare floods would be directed either onto the R-1 floodplain or the heavily vegetated terrace west of the existing channel. A small projection on the east end of its upstream face would direct moderate flow farther to the right before spilling out onto the R-1 floodplain and would serve as a small stockpile of coarse sediment that can be redistributed on the R-1 floodplain during larger flow events.

3.4 Wood Features – Structured Log Jams (SLJ) and Wood Placement (WP)

Woody material is a natural part of healthy rivers. It provides important habitat for aquatic species by providing cover from high flows and predators. The low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. It can help create and maintain beneficial habitat features such as pools, islands, and gravel bars. WPs are included in the in-channel and riverine design elements above as WP-1, SLJ-1, and SLJ-2.

Large wood objectives for the Oregon Gulch design can be summarized into three categories: hydraulic, habitat, and roughness elements. The preferred strategy to accomplish these objectives is to design and build wood features that emulate natural wood jams that are deformable, evolve over time, and perform as dynamic features in the landscape. This approach provides a unique opportunity to implement large wood features that provide a balance between physical process and ecosystem. This approach does, however, have the potential to shorten the design life of the structures. Natural river processes and channel evolution that can cause physical instability are

supported by the TRRP and Reclamation and are consistent with the 2000 Trinity River EIS/EIR Record of Decision (ROD) framework.

A combination of whole trees harvested on-site and rootwad logs from both on-site and off-site staging would be used. The SLJ-1 and SLJ-2 features are planned for construction on the Oregon Gulch delta at the project site's downstream end. These structures are intended to increase topographic and hydraulic diversity and to promote roughness and vegetation establishment. The structures' location was chosen to encourage temporary and long-term wood recruitment for racking and wood storage in the system. The delta area has recently been losing vegetation due to scour and natural erosion and currently exhibits a single thread low-flow channel. Historically this area has had more diversity, splitting the flow into two or three channels. The WP-1 large wood structure uses an unusually large cottonwood tree that currently exists at the project site and must be removed to accommodate necessary excavation.

Large wood would be placed along both the IC-1 channel banks and in the wetlands for in-water cover. Wood and slash would also be heavily used on the floodplain to provide roughness and high-quality cover for fish. Slash would also be used as mulch and worked into the soils to increase moisture-holding capabilities. Large wood would be incorporated in the upstream portion of U-2 to provide roughness, habitat, and structural stability along the newly constructed bank. Whole trees buried within the bank would slowly be exposed if/when the upstream face of U-2 erodes. Smaller wood, slash, and willow clumps would also be added to the upstream face of U-2.

Impacts associated with the use of organic (e.g., large wood, slash) and inorganic (e.g., boulders) materials were analyzed in the Master EIR under Sediment Management activities along with other activities that would facilitate channel construction and maintenance (e.g., excavation and placement of alluvial material in in-channel and riverine areas). The TRRP would use appropriate materials to cause and enhance changes in channel geometry intended to improve aquatic and wildlife habitat as well as ecological function. The addition of large rock (>6 inches) as ballast for rock/wood structures (e.g., SLJs) would ensure that these structures would remain in place and confine the river, thereby increasing the power of the river to scour and maintain adult salmonid holding habitat.

As appropriate, large wood and accompanying slash removed as part of vegetation clearing activities would be retained and used to construct SLJ and WP structures during riverine and in-channel activities to provide additional hydraulic and habitat complexity and temporary erosion control measures. These activities would potentially occur in any of the IC or R features. This activity could include large wood placement of individual pieces, small accumulations, and large habitat structures. The creation of SLJ and WP structures would develop topographical and hydraulic complexity and increase bank length to provide additional salmonid rearing habitat over a wide range of flows. The use of these structures would also improve spawning, holding, and rearing habitat for anadromous salmonids.

Processed alluvial material would be created on-site, obtained and imported from off-site gravel processing areas, or purchased from local vendors for delivery. Unprocessed material or “pit-run” dirt and gravel from on-site excavation could be used to construct features and for habitat enhancement, using methods that would be continuously monitored for compliance with turbidity standards when equipment is working in or near the river.

All large wood features would be designed so that local velocities would be safe for navigation during relatively low river flows (less than approximately 2,000 cfs). Natural wood material would be placed in a manner to reduce the chances of hazardous contact with swimmers and boaters at flows less than about 2,000 cfs.

Because of uncertainties about the availability, types, shapes, and sizes of the wood and the planned construction methods, the exact amounts and wood placement locations are not known at this time. Trees, treetops, and branches for use in constructing large wood structures would be obtained on-site and/or opportunistically from other lawful sources (e.g., public or private lands where vegetation management activities have occurred) and delivered to the ESL. The final locations and dimensions of SLJ and WP structure placement would be determined in the field based on direction from Reclamation's field engineer.

3.5 Contractor Use Areas (C)

Contractor use areas would be used for stockpiling and sorting materials, staging equipment, contractor parking, and similar activities. They could also serve as transportation corridors for moving equipment and materials from one activity area to another. In this event, water would be applied to these areas for dust abatement. To support the intent of rehabilitation, the design team designated contractor use areas in locations that avoid sensitive resources.

There are up to nine activity areas that would be available as contractor use areas. Construction activities in contractor use areas may include grading, processing earth and tailing materials, and clearing vegetation, staging and stockpiling of construction equipment. Disturbance would be minimized to the extent possible. The contractor use areas would be reviewed by the TRRP and construction contractor before channel rehabilitation activities begin. At that time and as construction begins, decisions would be made to minimize disturbance to sensitive zones and limit work to needed zones within designated contractor use areas

3.6 Access Routes

There are eight routes identified as discrete activity areas (A-1 through A-8). None of these are associated with an existing route open to the public. Access routes A-1 through A-4 are existing roads that originate on private property and cross onto Bureau of Land Management (BLM) land. These routes would be used primarily by heavy equipment and other vehicles and would often require two-way traffic. The site-specific design and use of these routes would consider factors like topography, soils, existing vegetation, and the need for future vehicle access, e.g., for revegetation maintenance. Sky Ranch Road would be used to access the site.

Four on-site temporary access routes (A-5 through A-8) would be constructed to connect the activity areas to the main entrance route (Figure 2-1). Access roads throughout the site support equipment access and construction within the ESL. Whenever possible, existing roads would be used for access, although some widening could be necessary. The total length of access roads to be used during project construction is 1.3 miles.

The project design requires moving up to 500,000 cubic yards of spoils/tailings to an off-site location at the Eagle Rock quarry (see Figure 2-1). Up to 29,000 trips by large-capacity hauling trucks would be made between the project site and the Eagle Rock quarry. Travel would be on access roads on the project site, Sky Ranch Road, State Route 299, and a short access road to the spoils/tailings site (quarry).

River crossings and fords located at A-5, A-6, A-7, and A-9, or other locations as required, would be constructed of coarse material that shall meet specifications provided for IC-1. The river crossings, made of local native alluvium and clean gravel, would be graded to final design elevations or left in place to be moved downstream by high flows post-construction. All temporary crossings along the access routes would be designed and constructed to meet the requirements for heavy equipment such as trucks and excavators. All excavated material (e.g., from lowering floodplains) would be placed on the same side of the river from which it was taken.

Due to requirements to retain passage for fish and boats, at least one-third of a river crossing would be submerged to a minimum depth of 1 foot under base flow conditions. The construction of these temporary crossings would likely require some vegetation removal on either side of the crossing within an approved activity area adjacent to the crossing (e.g., IC-1). All temporary crossings would be constructed to not impede the passage of aquatic organisms or vessels' navigability at the crossings.

3.7 Design Constraints

Early in the planning process, the TRRP identified several sensitive features that are critical with respect to design considerations (e.g., cultural resources, infrastructure). The design teams worked closely with Reclamation and BLM cultural resources staff to avoid cultural resource features (e.g., dredge tailing deposits) that provide important information on historic mining along this reach of the Trinity River.

Sky Ranch Road is located adjacent to the Oregon Gulch ESL and would not be affected by river restoration activities. No homes are within the ESL, and the implemented project would not increase the 100-year water-surface elevation near any insurable structures.

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow BLM requirements as well as applicable regulations of California Public Resource Code 4428-4442 (Fire Plan for Construction and Service Contracts) during dry periods to minimize the potential for the initiation and spread of fires from the work site. Removing vegetation (e.g., weed whipping) along access routes could be required to enhance fire prevention and protection during the work period.

4. Rehabilitation Activities

This section describes the proposed rehabilitation activities that would occur under the Proposed Action. A combination of these activities would take place at each location, concurrently and in sequence. Rehabilitation activities include recontouring, vegetation removal, sediment and gravel movement and augmentation, and revegetation activities. Proposed construction methods are also discussed at the end of this section.

4.1 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the Proposed Action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but, where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 2-1, upland and contractor use areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including contractor use areas, would be used for in-river placement. Large wood would be chipped or masticated for use as organic material to increase nutrients and enhance the water holding for revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and, potentially, scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

4.2 Sediment and Gravel Placement

Implementation of the Proposed Action would require placement of alluvial materials at activity areas throughout the site. The size of alluvial materials necessary to construct the in-channel and floodplain features varies, depending on the activity areas' function and location.

Three basic classes of rock materials would be used (Table D-4). Clean gravel and cobble (CGC) would be used to construct the submerged portions of U-2 and IC-2 when river turbidity is a potential problem during material placement. Pit run (PR) would be used as above-water fill in situations when turbidity is not a concern. Cobble and small boulders (CSB) would be added to PR or CGC as needed to coarsen the grain-size distribution of the fill placed in areas where greater resistance to erosion is required. Several different materials mixtures would be used to meet the requirements for turbidity control within U-2, the constructed landslide deposit area on river left, with varying CSB, CGC, PB, and wood ratios.

Table D-4 describes the size classes of processed alluvial materials specified by the design team that would be excavated from riverine and in-channel activity areas (e.g., IC-1) and processed on-site at contractor use areas (Figure 2-1). In the event quantities of specific size classes are unavailable from within the site, material would be imported from local sources available to the TRRP.

Table D-4. Sediment Material Types and Size Classes for Construction of IC Features

Material	Description	D50 a (inches)	D90 b (inches)	Dmax c (inches)	Percent Fines	Total Volume (yd3)
Fines	Particles less than 0.5 inch	--		0.5		2,390
Pit Run (PR)	Excavated tailings	2–3	5-6	10–12	<30	24,340
Clean Gravel and Cobble (CGC)	Gravel and cobble between 0.5 and 6 inches intermediate diameter	2		6		13,130
Cobble and Small Boulders (CSB)	Cobble and small boulders between 5 and 12 inches intermediate diameter	7–9		15	<5	13,000

a. D50 indicates that the average particle size falls within this range.

b. D90 indicates that 90 percent of the particles have a diameter smaller than this range.

c. Dmax indicates the maximum particle diameter.

Table D-5 displays the cut and fill quantities, fill types, and numbers of large wood pieces required for the various design features. Excavation of R-1, R-2, and R-3 would involve upwards of 516,500 cubic yards of cut. Up to about 52,000 cubic yards of that total would be used as fill in the construction of other design features, and about

143,000 cubic yards would be used at the U-2 constructed landslide area within the project ESL. The remaining 321,500 cubic yards of spoils/tailings would be transported off-site for disposal. Quantities of wood needed are discussed in more detail below.

Table D-5. Cut and Fill Material Types and Quantities Required at Each Activity Area

Feature	Cut (yd^3)	Fill (yd^3)	Fill (yd^3)	Fill (yd^3)	Fines (yd^3)	Large Wood (yd^3)
		PR	CGC	CSB		
R-1	233,070	2,070	4,140			120
R-2	32,640					20
R-3	68,880					40
WP-1				150		10
U-2		21,010	5,200	12,350	2,390	55
IC-1	181,890					75
IC-2		1,260	3,790			35
SLJ-1				225		16
SLJ-2				275		13
W-1						60
W-2						20
U-1		143,000				
Totals	516,480	167,340	13,130	13,000	2,390	464

Notes: PR = pit run, CGC = clean gravel and cobble, CSB = cobble and small boulders, R = riverine, WP = wood placement, U = upland, IC = in-channel, SLJ = structured log jams, W = wetland.

4.3 Wood Placement

Implementation of the Proposed Action would use large wood to enhance aspects of the design features. These features would be integrated into the design of R and IC activity areas to provide habitat cover and structure and would slow high-flow velocities to improve aquatic habitat over a range of flows.

SLJs and large wood would be installed to mimic natural wood features that formed under historical conditions. Large wood materials used to construct the project would be supplied from within the project ESL and off-site locations. Full-length trees would primarily be sourced from the boundaries of the river right features. There are up to 464 trees that would be used for both structural and habitat placements. Additional full-length trees may come from other parts of the Yurok Tribe's property at Oregon Gulch.

Logs from off-site would be harvested and transported to the project via haul trucks. Additional needed logs and slash would come from a combination of on-site and off-site locations. Excess slash would be chipped or masticated and used as mulch for erosion control and revegetation efforts to increase site productivity, provide effective ground cover on disturbed areas, and function as cover habitat for terrestrial organisms.

A strategic combination of various wood materials would be used at each project location to meet individual feature objectives. The exact size, quantity, and quality of wood materials would depend on availability and may need to be adjusted to accommodate site-specific constructability needs and source availability. Structural members used to construct the main architectural components would use only Douglas-fir wood in good condition.

SLJ features would include toe logs set into the channel bed elevation to stabilize the toe of the channel bank to provide a foundation on which to build the key logs, slash pile, cuttings, and rock and reduce the tendency for the toe of the bank to slump in case channel incision occurs. A layer of key logs would be installed on top of the toe logs perpendicular to flow. In some cases, it could be beneficial to place the rootwads of key logs into the flow path at an angle to flow of at least 45 degrees. Slash would be placed under some of the key log rootwads and in thin layers on top of the key rootwads before the addition of ballast and backfill. The intended result is a sequence of cut banks, rootwad cover, and fine wood, providing year-round salmonid rearing habitat and better protecting the channel bank from erosion.

Structural components of the SLJs will use primarily Douglas-fir. The exact size, quantity, and quality of wood materials used for all wood placement on-site would be dependent on the availability and needs. Wood use will be adjusted to accommodate site-specific constructability needs and source availability. Placement of whole-tree logs would use additional species salvaged on site. Logs would be primarily Douglas fir, but may also include madrone, white alder, cottonwood, grey pine, ponderosa pine, and Pacific willow. Whole tree placements would be constructed by toppling salvaged trees into the flow, pointed in the downstream direction. Some whole tree placements may be pinned or woven between living trees to prevent entrainment. Whole trees would be cut to limit the maximum length to 80 feet. Typically, the conifers are longer than the hardwoods. Logs with rootwads would be a minimum of 35 feet long.

4.4 Revegetation Activities

Revegetation with native vegetation and control of invasive plants would occur on up to 39.5 acres that would be disturbed by project activities. The removal of mine tailings and subsequent reconstruction would result in several new landforms. Revegetation would be required at a new large upland feature at U-1 (5.6 acres), the constructed landslide deposit (6.7 acres), and new floodplain landforms at R-1, R-2, and R-3 (16.8 acres) that include existing ponds, wetlands, and forested islands.. The 9.0 acres at the IC-1 and IC-2 features would not require revegetation as they would become in-channel features. About 0.4 acre of existing wetlands and a 0.1 acre of wood features would require little or no revegetation. Temporary impacts would occur on up to 34.9 acres of contractor use areas and 4.3 acres of temporary access roads. Construction activities within contractor use areas would minimize disturbance to native vegetation where possible. The areas where disturbance occurs would be revegetated with native plants.

The TRRP's objective for revegetation of the Oregon Gulch rehabilitation site is to promote the establishment and growth of a more diverse assemblage of riparian shrubs and deciduous hardwoods than presently exists with varying ages so that the size, frequency, and distribution of native vegetation would increase in the future. By meeting this objective, the functions and values of native riparian and upland vegetation are expected to increase over time. In addition, the revegetation plan emphasizes the expansion of large conifers and hardwoods that could be naturally recruited as woody material into the mainstem.

To varying degrees, impacts to vegetation are anticipated at each activity area. Project activities are designed to ensure that riparian vegetation, in particular, is minimally affected by implementation of the Proposed Action and is replaced at a 1:1 ratio to meet the California Department of Fish and Wildlife's (CDFW) standard of no net loss of riparian area habitat within the Trinity River corridor. Revegetation would provide aquatic refugia at high flows, improve terrestrial habitat for birds and other wildlife, provide future wood recruitment, and provide future input of terrestrial nutrients to the river. Revegetation efforts would emphasize actions to create conditions that promote natural revegetation with the creation of wet (riparian) conditions. This would include burying or ripping wood into the soil in Upland activity areas to enhance moisture retention.

Under this activity, revegetation of riparian and upland areas would rely on a combination of planting and natural recruitment of native species, consistent with TRRP's 2016 Draft Riparian Revegetation and Monitoring Plan (RRMP) and the needs of the BLM. Native willows salvaged from activity areas, including contractor use areas, would be used to revegetate activity areas; the willows would be replanted during or after construction to speed vegetation recovery. Replanting of affected native vegetation (e.g., shrubs, trees) would be completed in accordance with a site-specific revegetation guidelines prepared by the TRRP. TRRP uses only plant materials from Phytophthora-inspected nurseries[4]. The intent at this site is largely to increase riparian capacity by increasing ground water levels so that revegetation may occur naturally and using on-site plant and seed materials. Wood placement could be used in any activity area to enhance site conditions to benefit the revegetation effort. All C and U areas would be seeded and mulched with native grass seed; a cover crop of non-persistent recleaned wheat (*Triticum aestivum*) would be planted on private land within the R activity areas in conjunction with wetland plants and willows where appropriate[5].

Revegetation at the Oregon Gulch rehabilitation site would include preparing planting areas and planting a mixture of wetland, riparian, and upland plant species. The plantings would include plants salvaged from the site; nursery container stock, including bare-root plants and herbaceous plugs; and grass, forb, and oak (*Quercus* spp.) seeds.

Plant species expected to be incorporated into the revegetation plan include California brome (*Bromus carinatus*), incense cedar (*Calocedrus decurrens*), sedge (*Carex spp*.), wildrye (*Elymus* spp.), rush (*Juncus* spp.), ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), mugwort (*Artemesia douglasii*), madrone (*Arbutus menziesii),* black cottonwood (*Populus trichocarpa),* oak, and willow (*Salix* spp.). Arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and shiny willow (*S. lasiandra*) clumps that are salvaged from excavated areas would primarily be placed in or near wood structures. Cottonwood and willow poles would be planted in select areas as appropriate to increase species diversity. Conifers, madrones, and acorns would be planted in the upland areas where the soil can be amended with organic material, and planting microsites would be prioritized by the amount of afternoon shade provided by the surrounding topography and vegetation. The organic material amendment would consist of wood of various types (chipped, pieces, or logs) buried or ripped into surfaces and/or placed on top (e.g., mulch).

Disturbed areas higher than 4 feet above the summer baseflow water surface elevation would be mulched with weed-free straw at the rate of 1-2 tons per acre. Revegetation activities (e.g., planting and watering as appropriate) could start during the latter part of construction and would continue during the wet season (October through March) after final grading and site stabilization measures have been completed. Planting and seeding efforts could extend into the year following construction, depending on site and weather conditions. Herbaceous bare root material and hardwood poles would be used if planting occurs in or after November.

The revegetation plan at the Oregon Gulch rehabilitation site would include several planting zones; each zone would have different combinations of herbaceous, shrub, and tree species. Plantings in wetland and toe zones would be herbaceous and have approximately 3 feet between plant centers, with about 5,500 plants per acre. Plantings in willow, cottonwood, and transition zones would be sedges, shrubs, and trees and would have approximately 5 to 8 feet between plant centers, with about 872 plants per acre. Plantings in upland zones would

[4]TRRP would ensure that plant materials used and BLM lands would meet the standards of the appropriate land management agency.

5 Per BLM policy, recleaned wheat would not be planted on lands managed by BLM.

be shrubs and trees and would have approximately 10 to 12 feet between plant centers with 326 plants per acre. Willow trenches would be selectively installed.

The TRRP anticipates that upland planting areas would be irrigated for up to 3 years after planting. Water for any irrigation would be pumped from the Trinity River, consistent with existing riparian water rights from the river on public lands. Equipment would be used to water plants as needed, stored on-site for use during dry periods, or brought in as water demands require. Any irrigation measures would be temporary to improve the establishment and survival of vegetation. The decision to implement irrigation measures would be based on site-specific monitoring information (e.g., soil moisture, plant stress) concerning planting areas during or after initial revegetation efforts. Post-project monitoring could indicate the need for additional irrigation and other measures to ensure successful revegetation. These measures could include weeding, in-planting, and replanting as conditions require. At the outset of tailings removal, efforts will be made to remove invasive vegetation. Piles of removed weeds will be managed to stop seed spread.

4.5 Construction Methods and Schedule

Earthmoving equipment that could be used includes off-road articulated dump trucks, wheel loaders, tracked excavators, dozers, push-pull scrapers, water tenders, and graders. In addition, equipment capable of driving piles (e.g., large logs) with a hydraulic ram could be used to anchor or stabilize wood structures in various activity areas. For materials such as large wood that would be hauled from off-site, trucks capable of hauling up to 20 cubic yards at a time would legally obtain the materials from forested lands throughout the Trinity River watershed. Five “Super Dumps” (large-capacity dump trucks) would be used to haul spoils/tailings materials off the site. Each Super Dump can haul 17 cubic yards per load, and up 29,000 loads would be required to haul spoils/tailings to the quarry (see Figure 2-1). Hauling of spoils/tailings could begin at project start due to the extensive time required for completing all hauling activities.

Large boulders, cobbles, and gravel would be obtained primarily by processing alluvial material in the ESL within contractor use areas or coming from a local commercial source, likely Eagle Rock quarry. If needed, gravel would be transported from clean stockpiles stored at previous TRRP channel rehabilitation/gravel processing sites. Potential stockpiles include those on private lands at the Lower Junction City and Upper Junction City channel rehabilitation sites and other authorized sources on BLM lands.

The proposed rehabilitation activities may start after the National Environmental Policy Act (NEPA) process has been completed, and all required authorizations have been obtained. Preconstruction activities, such as vegetation removal for access and materials (wood and gravel) staging, could occur in the interim between completing the NEPA process and the rehabilitation activities if requisite permits and access agreements associated with these activities are in place. Upslope areas could be excavated to remove tailings (mining waste) as early as winter/spring 2021. In-river work would be initiated as early as summer 2021 but is expected to occur in 2022 or later. The flow-release schedule established for a particular water year could limit surface disturbance activities below the ordinary high-water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC-1 and IC-2) could require up to 6 weeks. Revegetation work (e.g., planting of willow pole cuttings and/or container plants and seeding with native grasses) would generally occur during construction, in the wet season (fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities for site maintenance would be conducted post-project as needed during the time period covered by the right-of-way; affected landowners would be notified in advance.

The processing of alluvial material needed for in-river work and fill and subsequent in-river construction are priorities to achieve project goals and reduce environmental impacts. If needed, processing of rock and sediment materials would take place on-site in the C-1 area.

When the in-river (IC and R) work is completed, excavation and grading in the floodplains would continue through the fall, with construction completed by December. Alternatively, construction would be sequenced as funding and environmental constraints allow, within the guidelines discussed in the EA/IS. Post-project in-river site maintenance work (e.g., regrading of riverine area, replenishing wood features) would generally occur during the in-river work window (July 15 through October 15) of whatever year maintenance is deemed appropriate. Site maintenance that does not require in-river work or river crossings would generally occur in the fall or the wet season, outside of the nesting period for bird species present in the area.

5. Environmental Commitments

The environmental commitments have been incorporated as design features as defined under NEPA and are included in the Proposed Action for NEPA analysis purposes. They also serve the California Environmental Quality Act (CEQA) mitigation measures that would be implemented in accordance with a project-specific mitigation monitoring and reporting program (see Appendix F – MMRPs in the EA/IS). As the implementing agency for the proposed rehabilitation activities, Reclamation has committed to implementing the environmental commitments—also known as the mitigation measures—identified in the Master EIR to avoid or minimize potential project impacts (refer to the Master EIR – Appendix A (the MMRP), for a description of these measures).

6. References

Cluer B. J., and Thorne, C. R. 2014. A Stream Evolution Model Integrating Habitat and Ecosystem Benefits. River Research and Applications 30(2), pp. 135-154. DOI: 10.1002/rra.2631.

Hoopa Valley Tribe (HVT) Design Group. 2020. Trinity River Chapman Ranch (River Mile 82.8–83.8) Draft 90% Design Document.

Knighton, D. 1998. Fluvial Forms and Processes. A New Perspective. Don Mills, Ontario: Oxford University Press.

Powers, P.D., M. Helstab, and S.L. Niezgoda. 2019. A Process-Based Approach to Restoring Depositional River valleys to Stage 0, an anastomosing channel network. River Research and Applications 35(1):3-13.

North Coast Regional Water Quality Control Board (Regional Water Board) and U.S. Bureau of Reclamation (Reclamation). 2009. Channel Rehabilitation and Sediment Management Activities for Remaining Phase 1 and Phase 2 Sites, Part 1: Final Master Environmental Impact Report and Part 2: Environmental Assessment/Final Environmental Impact Report. Trinity River Restoration Program. February 2015. SCH#2008032110. http://www.trrp.net/library/document/?id=476

Abbreviations and Acronyms

A	access road
BLM	Bureau of Land Management
C	contractor use
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGC	clean gravel and cobble
CSB	cobble and small boulders
EA/IS	Oregon Gulch Environmental Assessment/Initial Study
EIR	Environmental Impact Report
ESL	environmental study limit
FEMA	Federal Emergency Management Agency
HVT	Hoopa Valley Tribe
IC	in-channel
LAM	large amplitude meander
NEPA	National Environmental Policy Act
NMFS	National Marin Fisheries Service
PR	pit run
R	riverine
Regional Water Board	North Coast Regional Water Quality Control Board
RRMP	Riparian Revegetation and Monitoring Plan
SLJ	structured log jams
TRRP	Trinity River Restoration Program
U	upland
USFWS	U.S. Fish and Wildlife Service
VE	value engineering
W	wetland
WP	wood placement

Appendix E – Environmental Commitments

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

Table E-1. Environmental Commitments (EC) [1]

Label	Commitment
Mineral Resources	
EC-MR-1	Reclamation will provide notice of the project to landowners in and adjacent to the project area and to individuals with mining claims within the project sites. Notice will be given prior to project implementation and will include a schedule of river access closures. Reclamation will coordinate with private landowners and owners of active mining claims to develop site-specific measures that can be implemented to avoid or lessen project-related impacts to mineral resources associated with the Trinity River and its tributaries.
Fluvial Geomorphology and Soils	
EC-GS-1	Reclamation will implement the following measures during construction activities: ▪ Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation, as outlined in this EA/IS. (BMP Plan-2) ▪ All vehicular construction traffic will be confined to the designated activity areas, access routes, and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. (BMP AqEco-3) ▪ Clearly delineate the work zone (BMP AqEco-2). ▪ All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.
EC-GS-2	Reclamation will prepare a Storm Water Pollution Prevention Plan (SWPPP) to prevent erosion and control sediment into adjacent water bodies. Measures for erosion control will be prioritized based on proximity to the Trinity River. Reclamation will provide the SWPPP for review by associated agencies (i.e., BLM, the Regional Water Board, NMFS, and CDFW) upon request. Reclamation's project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction. The following features will be used as a guide to develop this plan: ▪ Prepare for unexpected failures of erosion control measures. Maintain a supply of erosion control materials onsite to facilitate a quick response to unanticipated storm events or emergencies. (BMP Fac-2) ▪ Consider needs for solid waste disposal and worksite sanitation. (BMP AqEco-2). ▪ Restore disturbed areas to pre-construction contours to the fullest extent feasible. (BMP Fac-10) ▪ Salvage, store, and use the highest quality soil for revegetation. ▪ Discourage noxious weed competition and control noxious weeds. ▪ Clear or remove roots from steep slopes immediately prior to scheduled construction. ▪ Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.

[1] Practices specific to Minerals, Geomorphology and Soils, Water Quality, and Fisheries are consistent with or include measures from the April 2012 National Best Management Practices for Water Quality Management on National Forest System Lands. (USDA, Forest Service, Volume 1: National Core BMP Technical Guide, FS-990a. USFS measures designated in parenthesis - (BMPs).

Label	Commitment
	▪ To the fullest extent possible, cease excavation activities during significantly wet or windy weather. ▪ Use straw bales, wattles, and/or silt fencing as appropriate. ▪ Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic. ▪ Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The ripping of the river's edge will remove plant roots to allow mobilization of the bed but will also intercept sediment before it reaches the waterway. ▪ Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the water body. Spoil sites will be recontoured and revegetated to reduce the potential for erosion. ▪ Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff is minimized. Erosion control in project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day. (BMP Fac-2)
Water Quality	
EC-WQ-1	▪ The project will comply with the water quality objective for turbidity levels in the Trinity River, as listed in the most recent version of the Basin Plan for the North Coast Region (current version dated May 19, 2011), except during construction and the first extended period of high flows, which will comply with the General Permits issued to the TRRP: ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. The 2015 General Order provides an allowable zone of turbidity dilution within which turbidity levels may be increased to more than 20 percent above naturally occurring background levels. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post - construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages will be tolerated is defined in the 2015 general discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs[2]. If naturally occurring background levels are

[2] At the time ins-stream construction is authorized, the natural background of the Trinity River in the vicinity of the project area typically ranges between 0 and 5 NTU

Label	Commitment
	greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level. ▪ To ensure that turbidity levels do not exceed the thresholds described above during in-river project construction activities, Reclamation will monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. ▪ During in-river project construction activities, the Applicant shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities (point of compliance) that could increase turbidity. The Applicant shall monitor for turbidity increases and shall collect field turbidity measurements in accordance with Mitigation Measure 4.5 1a and Mitigation Measure 4.51b in the MMRP. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. If grab sample results at the point of compliance indicate that turbidity levels exceed 20 percent above naturally occurring background or 20 NTUs, whichever is greater, remedial actions will be implemented to reduce and maintain turbidity at or below this threshold level at the point of compliance. Potential remedial actions include halting or slowing construction activities and implementation of additional Best Management Practices (BMPs) until turbidity levels are at or below 20 percent above naturally occurring background or 20 NTUs, whichever is greater. A monitoring report containing all turbidity measurements shall be submitted in a tabular format to the Regional Water Board and the land management agencies (Forest Service and BLM) upon annual project completion. The monitoring report shall be written in a manner that clearly demonstrates compliance with all water quality monitoring requirements.
EC-WQ-2	Fill gravels used on the streambeds, stream banks, and river crossings or alluvial material used for coarse sediment additions will be composed of clean, spawning-sized gravels (3/8- to 5-inches diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Clean gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater. Abutment and embankment materials will be native alluvium available from the project area. (BMP AcEco-2)
EC-WQ-3	Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.
EC-WQ-4	To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation will implement the following design features, as appropriate:

Label	Commitment
	▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed as needed to reduce short-term erosion prior to the start of the rainy season. ▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment onsite and prevents sediment delivery to streams. (BMP-Fac-2) ▪ Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels or other water bodies. ▪ Decompact (i.e., deep ripping-up to 18") floodplain areas so that surfaces are permeable, and no surface water runoff occurs. (BMP Fac-10) ▪ To reduce sedimentation to the Trinity River, access routes will be stabilized or decommissioned upon completion of work in those areas. Decommissioning is defined as removing those elements of a road that reroute hillslope drainage and present slope stability hazards.
EC-WQ-5	Construction specifications will include the following features to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) on vegetation and aquatic habitat resources within the project boundary: (BMP Fac-7) ▪ Equipment and materials will be stored away from wetland and surface water features. No hazardous materials, including fuels, oils, and solvents, will be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing of construction equipment must be located in an upland location at least 150 feet from the active river channel or within an adequate secondary fueling containment area. ▪ Use vegetable oil or other biodegradable hydraulic oil for heavy equipment hydraulics whenever practicable when operating in or near water. (BMP AqEco-2) ▪ Ensure all equipment operated in or adjacent to the waterbody is clean of aquatic invasive species as well as oil and grease and is well maintained. ▪ Construction equipment that will come in contact with the Trinity River will be inspected daily. Vehicles will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. ▪ External oil, grease, and mud will be removed from equipment using steam cleaning. Wash sites must be located in upland locations so that dirty wash water does not flow into stream channels or wetlands. Untreated wash and rinse water will be adequately treated prior to discharge if that is the desired disposal option. ▪ Gasoline engines and pumps operated on the floodplain will be isolated from the ground by an impermeable barrier so that any leaking petroleum products are isolated from the ground. ▪ Spill containment booms will be maintained onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times. ▪ The contractor will develop and implement site-specific BMPs, a water pollution control plan, and spill prevention and containment plan in accordance with applicable federal and state requirements. The contractor will be responsible for immediate containment and removal of any toxins released.
Fishery Resources	
EC-FR-1	The proposed construction schedule avoids in-channel work during the period which could affect spawning spring- and fall-run Chinook salmon, coho salmon, and steelhead or their embryos once in the gravel. As directed by the 2000 Biological Opinion (National Marine Fisheries Service 2000).

Label	Commitment
	Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (e.g., July 15-September 15). Alluvial material used for coarse sediment additions will be composed of washed, spawning-sized gravels (3/8- to 5-inches diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter; will be free of contaminants, such as petroleum products; and will pass Caltrans cleanliness test #227 with a value of 85 or greater.
EC-FR-2	To avoid or minimize potential injury and mortality of fish during riverine activities (e.g., addition and grading of coarse sediment), equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. The number and frequency of vehicles crossing the river will be minimized. Equipment and vehicles will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or a person will wade ahead of equipment to scare fish away from the crossing area. If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting DFG and NMFS criteria to prevent entrainment or impingement of small fish. Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates. Coordinate project site dewatering with a fisheries biologist qualified to perform fish and amphibian relocation activities. Minimize the length of the dewatered stream channel and duration of dewatering. If the work area requires periodic pumping of seepage, place pumps in flat areas well away from the stream channel. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel. To avoid or minimize potential injury and mortality of fish during excavation and placement of fill materials in the active low-flow channel, equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will ensure that before submerging an excavator bucket or laying gravel below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area. To avoid impacts to mobile life stages of salmonids that may be present in the water column, the first layers of clean gravel that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area. To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will be injected only in select locations where juvenile salmonids would not be expected to be holding due to high water velocities.
EC-FR-3	Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fishery biologist immediately after recession of flood flow events designated as a 1.5-year or less frequent event (i.e., Q >6,000 cfs) for a period of 3 years following construction. These flows, and associated fry stranding surveys, will typically occur between January and May. If substantial stranding is observed, Reclamation will take appropriate measures to return stranded fishes to river habitats and to subsequently modify the constructed surfaces prior to the next managed flow release to reduce the likelihood of future occurrences of fry stranding.
EC-FR-4	Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD. (BMP AcEco-2)

Label	Commitment
	Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After 5 years, the need for additional riparian habitat and wetland enhancement will be evaluated in a written report. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFW, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of riparian habitat after a 10-year monitoring period. If the standard set in the revegetation plan is not met, infill with additional plantings. In addition, wetlands will be re-delineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 5 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional proactive measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within rehabilitation site boundaries after 10 years.
EC-FR-5	Low water crossings will only be constructed and used between July 15 and September 15. The number of vehicle and equipment crossings of the Trinity River will be minimized. Reclamation will construct the low-flow channel crossings to allow adequate depths and velocities for adult and juvenile salmonids to pass safely. Flows associated with storm events are not considered critical because the width and hydrologic conditions associated with low-flow channel crossings in the Trinity River are not considered to limit fish passage at elevated flows and would be comparable to hydrologic conditions in local riffle-and-run features. For Trinity River low-flow channel crossings at base flows, velocities will not exceed 2 feet per second to allow for juvenile fish passage and water depths will not be less than 12 inches in two-thirds of the river channel to provide adequate depth for adult salmon and steelhead passage. Reclamation will not impede the physical features or hydraulic process of the Trinity River in a fashion that would be inconsistent with the 2000 Biological Opinion (National Marine Fisheries Service 2000) or result in a temporary impairment to fish passage related to a bridge.
Vegetation, Wildlife, and Wetlands	
EC-VW-1	Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes to ensure that these features avoid and/or minimize to the fullest extent impacts to riparian habitats and jurisdictional waters. In addition, Reclamation will clearly identify, and flag in the field, biologically sensitive areas (e.g., jurisdictional waters and riparian habitat) to be protected, and will provide the contractor with specific instructions to avoid any construction activity within these features. Reclamation will inspect and maintain marked biologically sensitive areas on a regular basis throughout the construction phase. (BMP AqEco-2)
EC-VW-2	A qualified botanist will conduct a minimum of two pre-construction surveys to determine if special-status plant species occur within the project site. Surveys shall be conducted during the blooming periods of the plants potentially occurring at the site to determine (1) if the species occur and (2) the quality, location, and extent of any populations. If a special-status plants species is found within 250 feet of any proposed disturbance, the following measures will be implemented. (BMP AqEco-2) Prior to the start of disturbance, exclusionary fencing will be erected around the known occurrences. If necessary, a qualified botanist shall be present to assist with locating these special-status plant populations. The exclusionary fencing will be periodically inspected throughout each period of construction and be repaired as necessary. If a population cannot be fully avoided, Reclamation will retain a qualified botanist to (1) determine appropriate salvage and relocation measures and (2) implement appropriate measures in coordination with CDFW staff.

Label	Commitment
EC-VW-3	Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation sites to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, the following measures will be implemented. Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, the following measures will be implemented. A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the rehabilitation sites and a 250-foot buffer around the sites. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey(s) will be used to ensure that no nests of this species within or immediately adjacent to the rehabilitation site will be disturbed during project implementation. To the extent possible given timing for construction and with the contract award, pre-construction surveys will conform to methodologies identified in a Willow Fly Catcher Survey Protocol for California available online at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=84019&inline> (Bombay et al. 2003). If an active nest is found, CDFW will be contacted prior to the start of construction to determine the appropriate mitigation measures. If vegetation is to be removed by the projects and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the projects will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.
EC-VW-4	If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary. In the event that a foothill yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.
EC-VW-5	A minimum of one survey for western pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a western pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, a qualified biologist will trap and move western pond turtles out of the construction area to nearby suitable habitats. During construction, in the event that a western pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until qualified personnel have moved the turtle(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.
EC-VW-6	Prior to the start of construction, a qualified biologist will conduct surveys of the rehabilitation sites to determine whether suitable nesting habitat for California yellow warblers, yellow-breasted chats, yellow rail and Vaux's swifts is present. If suitable habitat is present, the following measures will be implemented.

Label	Commitment
	Grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, the following measures will be implemented. A qualified biologist will conduct a minimum of one pre-construction survey for these species within the rehabilitation sites and a 250-foot buffer around the sites. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction surveys will be used to ensure that no nests of these species within or immediately adjacent to the rehabilitation sites will be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (e.g., shrubs and trees) that will be removed by the projects will be removed before the onset of the nesting season (typically March 1 for migratory song birds). This will help preclude nesting and substantially decrease the likelihood of direct impacts.
EC-VW-7	Due to the removal of the bald eagle from the endangered species list and the availability of the National Bald Eagle Management Guidelines provided by the U.S. Fish and Wildlife Service to protect the bald eagle, modified commitments are outlined below. These measures are now stricter than those outlined in the Master EIR and provide additional protections for the bald eagle to abide by directives of the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation sites to determine whether potential bald eagle or northern goshawk habitat occurs. If potential habitat occurs, Reclamation will implement the following commitment.: Construction will be scheduled to avoid the bald eagle and northern goshawk nesting season to the extent feasible. The nesting season for most raptors in Trinity County extends from January 1 through July 31. Thus, if construction can be scheduled to occur between August 1 and January 1, the nesting season will be avoided and no impacts to nesting bald eagles or northern goshawks would occur. If it is infeasible to schedule construction during this time, Reclamation will implement the provisions outlined in the incidental take permit for bald eagles issued by the USFWS prior to initiation of construction.
EC-VW-8	Pre-construction surveys for roosting bats and ring-tailed cats will be conducted prior to the start of construction activities. The surveys will be conducted by a qualified biologist. No activities that will result in disturbance to active roosts of special status bats or dens of ring-tailed cats will proceed prior to completion of the surveys. If no active roosts or dens are found, no further action is needed. Because bats are known to abandon young when disturbed, if a maternity roost is located, a qualified bat biologist will determine the extent of a construction-free zone to be implemented around the roost. If a bat maternity roost or hibernaculum is present, or a ring-tailed cat den is present, the following commitment will be implemented. CDFW will also be notified of any active bat nurseries within the disturbance zones. If an active maternity roost or hibernaculum is found, the projects will be redesigned to avoid the loss of the tree or structure occupied by the roost, if feasible. If the projects cannot be redesigned to avoid removal of the structure, demolition of that structure will commence before bat maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zones described above will be observed during the bat maternity roost season (March 1–July 31). If a non-breeding bat hibernaculum is found in a tree or structure to be razed, the individuals will be safely evicted under the direction of a qualified bat biologist, by opening the roosting area to allow air to flow through the cavity. Demolition will then follow no sooner than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action will allow bats to leave during dark hours, thus

Label	Commitment
	increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during darker hours. Ring-tailed cats are fully protected species under Fish and Game Code Section 4700. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research. If an active ring-tailed cat nest is found, the projects will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the projects cannot be redesigned to avoid removal of the occupied tree, the CDFW will be contacted for their input. If approved by CDFW, demolition of the tree will commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be removed, prior to disturbance, the CDFW will be notified to review and approve proposed procedures to ensure that no take occurs as a result of the action. Trees with dens that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow ring-tailed cats to escape during the darker hours.
EC-VW-9	▪ In order to avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures will be implemented: ▪ When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed. Preclude the use of rice straw in riparian areas. Limit any import or export of fill to materials that are known to be weed free. ▪ Ensure all construction equipment is thoroughly washed prior to entering and leaving the worksite. Equipment will be inspected to ensure that it is free of plant parts as well as soils, mud, or other debris that may carry weed seeds. ▪ Use a mix of native grasses, forbs, and on NFS and private lands potentially non-persistent non-native species (i.e., recleaned wheat) for seeding disturbed areas that are subject to infestation by non-native and invasive plant species. [3]Where appropriate, a heavy application of mulch will be used to discourage introduction of these species. Use of planting plugs of native grass species may also be used to accelerate occupation of disturbed sites and increase the likelihood of reestablishing a self-sustaining population of native plant species. ▪ Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species if those control methods are in conformance with existing agency and landowner policies and consistent with NEPA/CEQA requirements. Within the first 3 to 5 years post-project, if it is determined that onsite revegetation/post-project conditions do not meet landowner requirements, opportunities to revisit the site and remedy the concern will be considered. ▪ Avoid areas contaminated with known occurrences of *Didymosphenia geminata* (didymo). If no uncontaminated areas are available for water drafting, water drafting equipment will be cleaned by approved methods prior to drafting water from an uncontaminated location. Didymo-infested water shall be discharged away from a water source or from the same source where it was taken.

[3] Per BLM policy, non-persistent non-native species would not be used on lands managed by BLM.

Label	Commitment
EC-VW-10	Reclamation will develop and implement a plan to minimize impacts to freshwater mussels {e.g., western pearlshell mussel), terrestrial snails (and lamprey ammocetes that occupy habitat within the project area. This plan will include measures to collect, transport and relocate mussel populations to appropriate alluvial habitat within the project area. Relocation of ammocetes would occur using techniques to extract them from substrate habitat and move into the water column; thereby being transported to alluvial habitat downstream.
Recreation	
EC-RE-1	Reclamation will provide precautionary signage to warn recreational users of the potential safety hazards associated with project construction activities. Notification signs shall be posted at public river access areas located within the project area and managed by BLM. Signs and/or buoys shall also be placed within and directly adjacent to the project boundaries along the Trinity River in accordance with the requirements specified in Title 14, Article 6 of the California Code of Regulations. Additionally, public notification of proposed project construction activities and associated safety hazards shall be circulated in the local Trinity Journal newspaper prior to the onset of project construction.
EC-RE-2	Reclamation will repair and/or replace any facilities associated with the project that are impacted by project activities. This feature includes installation of interpretive signage consistent with the requirements of the BLM. Pre-construction meetings between Reclamation and landowners/land managers will identify the amount of vegetative screening to be retained at each recreation site within the project area.
Cultural Resources	
EC-CU-1	Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and the designated archaeologists for Reclamation and the respective land management agency will be consulted. Once the find has been identified, Reclamation, in coordination with the respective land management agency, will be responsible for developing and authorizing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.
EC-CU-2	If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 48 hours from the time that they gain access to the site. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Graves Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.
Air Quality	
EC-AQ-1	Reclamation will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate: ▪ Inactive construction areas will be watered as needed to ensure dust control.

Label	Commitment
	▪ Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer). ▪ Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion. ▪ Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust. ▪ All paved access roads, parking areas, and staging areas will be swept (with water sweepers), as required by Reclamation. ▪ Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by Reclamation. ▪ All ground-disturbing activities with the potential to generate dust will be suspended when winds exceed 20 mph, as directed by the NCUAQMD. ▪ Reclamation or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints. ▪ Reclamation will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).
EC-AQ-2	Reclamation has not burned piles on a TRRP channel rehabilitation project since the Canyon Creek Suite of sites were constructed in 2006. In the event burning of material is required, these practices would apply. ▪ Vegetative piles to be burned will consist only of dried vegetative materials. Burn piles will be no larger than 10 feet in diameter. Reclamation would ensure that field personnel will be onsite during all hours of burning, and materials necessary to extinguish fires will be available at all times. ▪ In general, all requirements of a NCUAQMD "Non-Standard" burn permit will be met for burning. Burn management planning will include but not be limited to the following: ▪ Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined by calling 1-866-BURN-DAY). ▪ Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (<10 mph), and temperature will be low (<80 ºF). ▪ Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions will minimize smoke emissions. ▪ Slash piles will not be constructed on logs, stumps, or talus slopes within 25 feet of wildlife trees with nest structures, in roadways, or in drainage ditches. Piles will not be placed within 10 feet of trees intended to be saved (reserved trees) or within 25 feet of a unit boundary. ▪ Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.
EC-AQ-3	Construction activity occurring within 300 feet of elementary schools will be limited to the period when school is not in session. Construction activity occurring within 300 feet of residences will be

Label	Commitment
	limited to Monday through Saturday, from the hours of 9:00 a.m. to 5:00 p.m. Reclamation will notify residences within 300 feet of the site and project activity and elementary schools will be notified of construction activity located near the school prior to site construction activities.
EC-AQ-4	Reclamation will ensure that a notice is posted at/adjacent to the rehabilitation site, which contains a phone number for the public to contact for concerns related to air quality.
Noise	
EC-NO-1	Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours from Reclamation, as needed.
EC-NO-2	Reclamation will require that all construction equipment be equipped with the manufacturer's specified noise muffling devices. Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (e.g., behind existing barriers, storage piles, unused equipment).
Public Services	
EC-PS-1	Reclamation will require that staging and construction work, including temporary road or bridge closures occurs in a manner that allows for access by emergency service providers. Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.
EC-PS-2	Reclamation will coordinate road closures occurring during the school year (mid-August through mid-June) with the appropriate school districts to avoid disruption of school attendance and student access to bus service.
Transportation/Traffic Circulation	
EC-TC-1	Reclamation will post signs during gravel haul activities notifying travelers of trucks entering the roadway. Reclamation will ensure that gravel trucks maintain a speed limit of 15 mph on residential and private roads and operate only between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday.
EC-TC-2	Reclamation will maintain access throughout the construction period for all private residences adjacent to the project boundary and access roads adjacent to the Trinity River. During the construction phase of the project, Reclamation will limit the amount of daily construction equipment traffic by staging construction equipment and vehicles within the project boundary throughout the work period. All large equipment "lowbed" movements will be performed as required by CHP/Caltrans, etc., using pilot vehicles in the front and rear. A "scout vehicle" can be sent forward in the narrow areas to avoid/advise oncoming public traffic.
EC-TC-3	Reclamation will perform a pre-construction survey of local federal and state roads to determine the existing roadway conditions of the construction access routes and will consult with the relevant agencies/private parties about road conditions prior to construction activity and post construction activity. An agreement will be entered into prior to construction that will detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.
EC-TC-4	Reclamation will prepare and implement a traffic control plan that will include provision and maintenance of temporary access through the construction zone, reduction in speed limits though the construction zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of construction workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians, and equestrians from construction activities. During the times that truck traffic and movement of

Label	Commitment
	equipment may result in a traffic obstacle or safety hazard (as defined in the traffic control plan), construction flagging and/or pilot cars will be used to ensure safe traffic conditions on Sky Ranch Road and other public access routes. Reclamation will obtain encroachment permits from the appropriate entities to work within road easements. These permits will require traffic control and signage to meet California standards.

Appendix F – Mitigation Monitoring and Reporting Program and Project Design Elements

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

1. Introduction

The first part of this appendix comprises the Mitigation Monitoring and Reporting Program (MMRP) for the Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7) (the proposed project). The purpose of providing the MMRP as an appendix is to facilitate its use as a stand-alone California Environmental Quality Act (CEQA)-compliant document, which clearly expresses to the reader the mitigation responsibilities of the Bureau of Reclamation (Reclamation) and the North Coast Regional Water Quality Control Board (Regional Water Board) in implementing the project. The mitigation measures listed herein, which are an updated version of those included in the Master Environmental Impact Report (EIR) (North Coast Regional Water Board and Reclamation 2009), are required by law or regulation and will be adopted by the Regional Water Board when it issues a Notice of Availability for the project.

The second part of this appendix consists of project design elements that shall be implemented as part of the proposed project. In general, the mitigation measures identified in Chapter 3 of this Environmental Assessment/Initial Study (EA/IS) correspond to the mitigation measures in Chapter 4 of the 2009 Master EIR. The mitigation measures in this appendix are meant to mitigate the same impacts as those identified in the Master EIR. Consequently, these mitigation measures are different only to the extent necessary to tailor the mitigation measures to the site-specific conditions.

Mitigation is defined by CEQA Section 15370 as a measure that:

- avoids the impact altogether by not taking a certain action or parts of an action;
- minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; and
- compensates for the impacts by replacing or providing substitute resources or environments.

The mitigation program identified in this appendix to reduce potential project impacts consists of mitigation measures, project design elements, and construction criteria and methods. The mitigation measures provided in the MMRP have been identified in Chapter 3, Affected Environment and Environmental Consequences, of the EA/IS as feasible and effective in mitigating project-related environmental impacts. This appendix includes a discussion of the following: legal requirements, intent of the MMRP, development and approval process for the MMRP, the authorities and responsibilities associated with the implementation of the MMRP, a description of the mitigation summary table, project design elements, construction criteria and methods, and resolution of noncompliance complaints.

2. Legal Requirements

The legal basis for the development and implementation of the MMRP lies within CEQA (including the California Public Resources Code [PRC]). Sections 21002 and 21002.1 of the California PRC state:

- Public agencies are not to approve projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such projects.
- Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.
- Section 21081.6 of the California PRC further requires: The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation.
- The monitoring program must be adopted when a public agency makes its findings under CEQA so that the program can be made a condition of project approval in order to mitigate significant effects on the environment. The program must be designed to ensure compliance with mitigation measures during project implementation to mitigate or avoid significant environmental effects.

3. Intent of the Mitigation Monitoring and Reporting Program

The MMRP is intended to satisfy the requirements of CEQA as they relate to the project and its use by Reclamation and Regional Water Board staff, participating agencies, project contractors, and mitigation monitoring personnel is anticipated during implementation of the project.

The primary objective of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will monitor construction activities as needed, on-site identification and resolution of environmental problems, and proper reporting to lead agency staff.

4. Development and Approval Process

The timing elements for implementing mitigation measures and the definition of the approval process have been provided in detail through this MMRP to assist staff from Reclamation and the Regional Water Board by providing the most usable monitoring document possible.

5. Authorities and Responsibilities

As the project proponent, Reclamation, functioning as the Trinity River Restoration Program (TRRP), will have the primary responsibility for the execution and proper implementation of the MRRP. The Regional Water Board may provide Reclamation with guidance, as warranted. Reclamation will be responsible for the following activities:

- Coordination of monitoring activities
- Management of the preparation and filing of monitoring compliance reports
- Maintenance of records concerning the status of all approved mitigation measures

6. Summary of Monitoring Requirements

Table F-1, which follows, summarizes the mitigation measures and associated monitoring requirements for the proposed project. The mitigation measures are organized by environmental issue area (i.e., Soils, Water Quality, etc.). Table F-1 is composed of the following four columns:

- **Mitigation Measure:** Lists the mitigation measures identified for each significant impact discussed in the Draft EA/IS for the project. The mitigation numbering system used in the Draft Master EIR/Draft EIR is carried forward in this MMRP.
- **Timing/Implementation:** Indicates at what point in time or project phase the mitigation measure is implemented.
- **Responsible Parties (tasks):** Documents which agency or entity is responsible for implementing a mitigation measure and what, if any, coordination is required (e.g., approval from Caltrans). If more than one party has responsibility under a given mitigation measure, the tasks of each individual party is identified parenthetically (e.g., "implementation" or "monitoring").
- **Verification:** Provides spaces to be initialed and dated by the individual responsible for verifying compliance with each specific mitigation measure.

7. Resolution of Noncompliance Complaints

Any person or agency may file a complaint that states noncompliance with the mitigation measures adopted as part of the project's approval process. The complaint shall be directed to Reclamation at the TRRP office (P.O. Box 1300, 1313 South Main Street, Weaverville, California 96093) and to the Regional Water Board (5550 Skylane Boulevard, Suite A, Santa Rosa, California, 95403) in written form, providing detailed information on the purported violation. Reclamation and the Regional Water Board shall investigate and determine the validity of the complaint. If noncompliance with a mitigation measure is verified, Reclamation shall take the necessary action(s) to remedy the violation. The complainant shall receive written confirmation indicating the investigation results or the final corrective action that was implemented in response to the specific noncompliance issue.

This page is intentionally left blank.

Table F-1. Summary of Mitigation Monitoring Requirements

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.2 Land Use			
Impact 4.2-3: Implementation of the project may affect the availability of a locally important mineral resource recovery site.			
4.2-3a Reclamation shall provide notice of the project to landowners within the Remaining Phase 1 and Phase 2 sites and to individuals with mining claims within the project sites. Notice will be given prior to project implementation and will include a schedule of river access closure.		Reclamation	
4.3 Geology, Fluvial Geomorphology, and Soils			
Impact 4.3-2: Construction activities associated with the project could potentially result in increased erosion and short-term sedimentation of the Trinity River.			
4.3-2a Reclamation will implement the following measures during construction activities: ▪ Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation. ▪ All vehicular construction traffic will be confined to the designated access routes and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. ▪ All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.		Reclamation (implementation) Regional Water Board (SWPPP review and approval) BLM (SWPPP review) NFMS (SWPPP review) CDFG (SWPPP review)	
4.3-2b Reclamation will prepare an erosion and sedimentation control plan (Storm Water Pollution Prevention Plan [SWPPP]). Measures for erosion control will be prioritized based on proximity to the river. Reclamation will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFG) upon request. Reclamation's project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction. ▪ The following measures will be used as a guide to develop this plan: ▪ Restore disturbed areas to pre-construction contours to the fullest extent feasible. ▪ Salvage, store, and use the highest quality soil for revegetation.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ Discourage noxious weed competition and control noxious weeds. ▪ Clear or remove roots from steep slopes immediately prior to scheduled construction. ▪ Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff. ▪ To the fullest extent possible, cease excavation activities during significantly wet or windy weather. ▪ Use bales, wattles, and/or silt fencing as appropriate. ▪ Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic. ▪ Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway. ▪ Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site would drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion. ▪ Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been revegetated. If work activities take place during the rainy season, erosion control structures must be in place and operational at the end of each construction day.			
Impact 4.3-3: Implementation of the project would interfere with existing, proposed, or potential development of mineral resources.			
4.3-3a Reclamation will implement the following measures during construction: ▪ Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation. ▪ All vehicular construction traffic will be confined to the designated access routes and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. ▪ All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.		Reclamation (implementation)	
4.3-3b Reclamation will prepare an erosion and sedimentation control plan (SWPPP) as stipulated in Mitigation Measure 4.3-2b.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.3-3c Reclamation will coordinate with private landowners and owners of active mining claims to develop site-specific measures that can be implemented to avoid, or lessen project-related impacts to mineral resources associated with the Trinity River and its tributaries.			
4.5 Water Quality			
Impact 4.5-1: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels during construction.			
4.5-1a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.5-1b To ensure that turbidity levels do not exceed the thresholds described above (4.5-1a) during in-river project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			
4.5-1c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products.			
4.5-1d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.			
4.5-1e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation will implement the following protocols: ▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
Impact 4.5-2: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels following construction.			
4.5-2a Turbidity increases associated with project activities will not exceed the water quality objectives for turbidity in the Trinity River basin (North Coast Regional Water Quality Control Board 2007).			
4.5-2b To reduce the potential for the access routes to continually contribute soil materials to the Trinity River following project construction, thereby increasing turbidity and total suspended solids in the river, these routes will be stabilized or decommissioned upon completion of work in those areas consistent with the requirements outlined in Chapter 2 (Design Elements and Construction Criteria). Decommissioning is defined as removing those elements of a road that reroute hillslope drainage and present slope stability hazards.			
Impact 4.5-3: Construction of the project could cause contamination of the Trinity River from hazardous materials spills.			
4.5-3a Reclamation will prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.			
4.5-3b Reclamation will ensure that any construction equipment that would come in contact with the Trinity River be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.			
4.5-3c Reclamation will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.			
Impact 4.5-5: Construction and maintenance of the project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan.			
Water quality Mitigation Measures 4.5-1a-e, 4.5-2a-c, and 4.5-3a-c provide measures to protect the beneficial uses of the Trinity River.			
4.6 Fishery Resources			
Impact 4.6-1: 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.			
4.6-1a The proposed construction schedule avoids in-channel work during the time period that could affect spawning spring- and fall-run Chinook salmon, coho salmon, and steelhead, or their embryos once in the gravel. As directed by the 2020 TRRP Biological Opinion, Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (e.g., July 15–October 15). After September 15, best management practices (BMPs) would be in place to minimize impacts to adult coho and Chinook salmon.		Reclamation (implementation)	
4.6-1b Alluvial material used for coarse sediment additions will be composed of clean spawning-sized gravels (3/8- to 5-inches diameter) from a local Trinity River basin source. Gravel will be processed to remove any silts, sand, clay, and organic matter and will be free of contaminants, such as petroleum products.			
Impact 4.6-2: 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.			
4.6-2a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.6-2b To ensure that turbidity levels do not exceed the thresholds described above (4.6-2a) during in-river project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			
4.6-2c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.6-2d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.			
4.6-2e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation will implement the following protocols: ▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. ▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
Impact 4.6-3: 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.			
4.6-3a Construction specifications will include the following measures to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) on vegetation and aquatic habitat resources within the project boundary: ▪ Equipment and materials will be stored away from wetland and surface water features. ▪ Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling will be conducted in an area at least 150 feet away from waters of the Trinity River or within an appropriate secondary fueling containment area.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill control plan. The contractor will be responsible for immediate containment and removal of any toxins released.			
Impact 4.6-4: Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state listed coho salmon.			
4.6-4a To avoid impacts to spawning and incubating salmonids, instream work will only occur between July 15 and September 15.			
4.6-4b To avoid or minimize potential injury and mortality of fish during riverine activities (e.g. removal of grade control structures, channel crossings, addition and grading of coarse sediment), equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.			
4.6-4c Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. This will be accomplished by minimizing vehicle traffic and by operating equipment and vehicles slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or by having a person wade ahead of equipment to scare fish away from the crossing area.			
4.6-4d To avoid or minimize potential injury and mortality of fish during excavation and placement of fill materials within the active low-flow channel, equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will ensure that before submerging an excavator bucket or laying gravel below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area. To avoid impacts to mobile life stages of salmonids that may be present in the water column, the first layers of clean gravel that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area.			
4.6-4e To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will only be injected in select locations where water velocities are too high, and juvenile salmonids would not be expected to be holding.			
4.6-4f Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fishery biologist immediately after recession of flood flow events designated as a 1.5- year or less frequent event (i.e., Q >6,000 cfs) for a period of 3 years following construction. These flows, and associated fry stranding surveys, would typically occur		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
between January and May. If substantial stranding is observed, Reclamation will take appropriate measures to return stranded fishes to river habitats and to subsequently modify the constructed surfaces prior to the next managed flow release to reduce the likelihood of future occurrences of fry stranding.			
Impact 4.6-5: Implementation of the project would result in the permanent and temporary loss of shaded riverine aquatic habitat (SRA) for anadromous salmonids.			
4.6-5a Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes necessary for the project to ensure that these features avoid and/or minimize to the fullest extent impacts to riparian habitats and wetland waters. In addition, Reclamation will clearly identify, and flag in the field, biologically sensitive areas (e.g., jurisdictional waters and riparian habitat) to be protected, and will provide the contractor with specific instructions to avoid any construction activity within these features. Reclamation will inspect and maintain marked areas on a regular basis throughout the construction phase.		Reclamation (implementation)	
4.6-5b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.			
4.6-5c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be redelineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within Project site boundaries after 10 years.		Reclamation (implementation)	
Impact 4.6-6: Implementation of the project would result in fish passage being temporarily impaired during the in-stream construction phase.			
4.6-6a Low water crossings will only be constructed and used between July 15 and September 15. Fill gravels used on the low-water crossings, streambeds, and stream banks will be composed		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
of clean spawning-sized gravels from a local Trinity Basin source. Gravel will be processed to remove silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Abutment and embankment materials used for bridges will be native alluvium obtained from within the boundaries of the Remaining Phase 1 or Phase 2 sites.			
4.6-6b Reclamation will construct the low-flow channel crossings to allow adequate depths and velocities for adult and juvenile salmonids to pass safely. Flows associated with storm events are not considered critical because the width and hydrologic conditions associated with low-flow channel crossings in the Trinity River are not considered to limit fish passage at elevated flows and would be comparable to hydrologic conditions in local riffle-and-run features. For Trinity River low-flow channel crossings at base flows, velocities will not exceed 2 feet per second to allow for juvenile fish passage and water depths will not be less than 12 inches in two-thirds of the river channel to provide adequate depth for adult salmon and steelhead passage.			
4.6-6c The number of vehicle and equipment crossings of the Trinity River will be minimized.			
4.6-6d Reclamation will not impede the physical features or hydraulic process of the Trinity River in a fashion that would be inconsistent with the 2020 Biological Opinion, or result in a temporary impairment to fish passage related to a bridge.			
4.7 Vegetation, Wildlife, and Wetlands			
Impact 4.7-1: Construction activities associated with the project could result in the loss of jurisdictional waters, including wetlands.			
4.7-1a Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, Reclamation will clearly identify, and flag in the field, biologically sensitive areas (e.g., jurisdictional waters and riparian habitat) to be protected, and will provide the contractor with specific instructions to avoid any construction activity within these features. Reclamation will inspect and maintain marked areas on a regular basis throughout the construction phase.		Reclamation (implementation)	
4.7-1b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands both within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.			
4.7-1c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of wetlands at the end of a 5 year period and no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be re-delineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within boundaries established for TRRP rehabilitation sites after 10 years.			
Impact 4.7-3: Construction of the project could result in the loss of individuals of a special-status plant species.			
4.7-3a A qualified botanist will conduct a minimum of two pre-construction surveys to determine if special-status plant species occur within the project site. Surveys shall be conducted during the blooming periods of the plants potentially occurring at the site to determine (1) if the species occur and (2) the quality, location, and extent of any populations. If a special-status plants species is found within 250 feet of any proposed disturbance, Mitigation Measures 4.7-3b and 4.7-3c will be implemented.		Reclamation (implementation)	
4.7-3b Prior to the start of disturbance, exclusionary fencing will be erected around the known occurrences. If necessary, a qualified botanist shall be present to assist with locating these special-status plant populations. The exclusionary fencing will be periodically inspected throughout each period of construction and be repaired as necessary.			
4.7-3c If a population cannot be fully avoided, Reclamation will retain a qualified botanist to (1) determine appropriate salvage and relocation measures and (2) implement appropriate measures in coordination with CDFG staff.			
Impact 4.7-4: Construction activities associated with the project could result in impacts to the state-listed little willow flycatcher.			
4.7-4a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, Mitigation Measures 4.7-4c and 4.7-4d will be implemented.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-4b Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, Mitigation Measures 4.7-4c and 4.7-4d will be implemented.			
4.7-4c A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the project site(s) and a 250-foot buffer around the site(s). The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey will be used to ensure that no nests of this species within or immediately adjacent to the project site(s) would be disturbed during project implementation. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.			
4.7-4d If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.			
Impact 4.7-5: Construction activities associated with the project could result in impacts to the foothill yellow-legged frog.			
4.7-5a If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for yellow- legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey would need to be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary.		Reclamation (implementation)	
4.7-5b In the event that a yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until the frog has been moved to a safe location with suitable habitat outside of the construction limits.			
4.7-5c Mitigation measures presented in Section 4.5 (Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the yellow-legged frog due to sedimentation and accidental spills.			
4.7-5d The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.7-6: Construction activities associated with the project could result in impacts to the western pond turtle.			
4.7-6a A minimum of one survey for pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, the nest will be excavated by the biologist and reburied at a suitable location outside of the construction limits.		Reclamation (implementation)	
4.7-6b Prior to construction in open water habitat, a qualified biologist will trap and move turtles out of the construction area to nearby suitable habitats.			
4.7-6c During construction, in the event that a pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until the turtle has been moved to a safe location within suitable habitat outside of the construction limits.			
4.7-6d Mitigation measures presented in section 4.5 (Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.			
4.7-6e The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			
Impact 4.7-7: Construction activities associated with the project could result in impacts to nesting California yellow warblers, yellow-breasted chats, and Vaux's swifts.			
4.7-7a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 4.7-7c and 4.7-7d will be implemented.		Reclamation (implementation)	
4.7-7b Grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 4.7-7c and 4.7-7d will be implemented.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-7c A qualified biologist will conduct a minimum of one preconstruction survey for these species within the project site(s) and a 250-foot buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The preconstruction survey will be used to ensure that no nests of these species within or immediately adjacent to the project site(s) would be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest.			
4.7-7d If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.			
Impact 4.7-8: Construction activities associated with the project could result in impacts to nesting bald eagles and northern goshawk.			
4.7-8a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks would be expected. If it is not possible to schedule construction during this time, Mitigation Measures 4.7-8c and 4.7-8d will be implemented.		Reclamation (implementation)	
4.7-8b Construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks would be expected. If it is not possible to schedule construction during this Mitigation Measures 4.7-8c and 4.7-8d will be implemented.			
4.7-8c Pre-construction surveys for nesting northern goshawks will be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys will be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist will inspect all trees immediately adjacent to the impact areas for bald eagle and northern goshawk nests. If an active nest is found close enough (i.e., within 500 feet) to the construction area to be disturbed by these activities, the biologist, in consultation with the			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
CDFG, will determine the extent of a construction-free buffer zone to be established around the nest.			
4.7-8d If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (i.e., trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.			
Impact 4.7-9: Construction activities associated with the project could result in impacts to special-status bats and the ring-tailed cat.			
4.7-9a A pre-construction survey for roosting bats and ring-tailed cats will be conducted prior to the start of construction activities. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active roosts of special-status bats or dens of ring-tailed cats will proceed prior to completion of the surveys. If no active roosts or dens are found, no further action is needed. Because bats are known to abandon young when disturbed, if a maternity roost is located, a qualified bat biologist will determine the extent of a construction-free zone to be implemented around the roost. If a bat maternity roost or hibernaculum is present, or a ring-tailed cat den is present, Mitigation Measures 4.7-9b and/or 4.7-9c will be implemented. CDFG will also be notified of any active bat nurseries within the disturbance zones.		Reclamation (implementation)	
4.7-9b If an active maternity roost or hibernaculum is found, the project will be redesigned to avoid the loss of the tree or structure occupied by the roost, if feasible. If the project cannot be redesigned to avoid removal of the structure, demolition of that structure will commence before bat maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zones described above will be observed during the bat maternity roost season (March 1–July 31). If a non-breeding bat hibernaculum is found in a tree or structure to be razed, the individuals will be safely evicted, under the direction of a qualified bat biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow air to flow through the cavity. Demolition will then follow no sooner than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action will allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.			
4.7-9c If an active ring-tailed cat nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree will commence outside of the breeding season			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
(February 1 to August 30). If a non-breeding den is found in a tree scheduled to be removed, the individuals will be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow ring-tailed cats to escape during the darker hours.			
Impact 4.7-11: Construction activities associated with the project could result in impacts to BLM and USFS sensitive species.			
Mitigation Measures 4.7-4a-c will reduce impacts to the little willow flycatcher to a less-than-significant level. Mitigation Measures 4.7-5a-d will reduce the impacts to the foothill yellow-legged frog to a less-than-significant level. Mitigation Measures 4.7-6a-d will reduce the impacts to the western pond turtle to a less-than-significant level. Mitigation measures 4.7-8a-c will reduce the impacts to the northern goshawk to a less-than-significant level, and Mitigation Measures 4.7-9a-b will reduce the impacts to special-status bat species to a less-than-significant level.		Reclamation (implementation)	
Impact 4.7-13: Implementation of the project could result in the spread of non-native and invasive plant species.			
4.7-13a When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed.		Reclamation (implementation)	
4.7-13b Preclude the use of rice straw in riparian areas.			
4.7-13c Limit any import or export of fill to materials to those that are known to be weed free.			
4.7-13d Ensure all construction equipment is thoroughly washed prior to entering the worksite. Equipment will be inspected to ensure that it is free of plant parts as well as soils, mud, or other debris that may carry weed seeds.			
4.7-13e Use a mix of native grasses, forbs, and non-persistent non-native species for seeding disturbed areas that are subject to infestation by non- native and invasive plant species. Where appropriate, a heavy application of mulch will be used to discourage introduction of these species. Use of planting plugs of native grass species may also be used to accelerate occupation of disturbed sites and increase the likelihood of reestablishing a self-sustaining population of native plant species.			
4.7-13f Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.8 Recreation			
Impact 4.8-1: Construction associated with the project could disrupt recreation activities such as boating, fishing, and swimming in the Trinity River.			
4.8-1a Reclamation shall provide precautionary signage to warn recreational users of the potential safety hazards associated with project construction activities. Signs and/or buoys shall be placed within and directly adjacent to the project boundaries along the Trinity River in accordance with the requirements specified in Title 14, Article 6 of the California Code of Regulations. Notification signs shall be posted at public river access areas within the project area managed by BLM, STNF, and DFG (e.g., Bucktail River Access, Steel Bridge Campground, Douglas City Campground, Indian Creek River Access, Junction City Campground). Additionally, public notification of Proposed Project construction activities and associated safety hazards shall be circulated in the local Trinity Journal newspaper prior to the onset of project construction.		Reclamation (implementation)	
4.8-1b Reclamation will repair and/or replace any facilities associated with Remaining Phase 1 or Phase 2 sites that are impacted by project activities. This measure would include installation of interpretive signage consistent with the requirements of the STNF and BLM. Preconstruction meetings between Reclamation and landowners/land managers will identify the amount of vegetative screening to be retained at each recreation site within the project area.			
Impact 4.8-2: Construction of the project could result in an increased safety risk to recreational users or resource damage to recreational lands within the project boundaries.			
Implementation of Mitigation Measures 4.8-1a-b, which provide precautionary signage and/or buoys adjacent to project boundaries and public notice at river access sites, would make this impact less than significant.		Reclamation (implementation)	
Impact 4.8-3: Construction activities associated with the project could lower the Trinity River's aesthetic values for recreationists by increasing turbidity levels in the Trinity River.			
4.8-3a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the ▪ 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.8-3b To ensure that turbidity levels do not exceed the thresholds described above (4.8-3a) during in-river project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. ▪ If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.8-3c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products.			
4.8-3d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All BMPs and sediment and erosion control devices will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be met during stockpiling of materials.			
4.8-3e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation or its contractor will implement the following protocols: ▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. ▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
4.10 Cultural Resources			
Impact 4.10-2: Implementation of the Proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources.			
4.10-2a Prior to initiation of construction or ground-disturbing activities, all construction workers shall be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel shall be instructed that upon discovery of buried cultural resources, work within 50 feet of the find shall be halted and Reclamation's designated		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
archaeologist shall be consulted. Once the find has been identified, Reclamation shall be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the Programmatic Agreement (PA) and in compliance with the National Historic Preservation Act (NHPA).			
4.10-2b If human remains are encountered during construction on non- federal lands, work in that area must be halted and the Trinity County Coroner's Office shall be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) shall be notified within 24 hours of determination, as required by Public Resources Code, Section 5097. The NAHC shall notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 U.S.C. 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation shall be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.			
4.11 Air Quality			
Impact 4.11-1: 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.			
4.11-1a Reclamation will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate: ▪ Inactive construction areas will be watered as needed to ensure dust control. ▪ Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1–2 feet vertical distance between top of load and the trailer). ▪ Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust. ▪ All paved access roads, parking areas, and staging areas will be swept (with water sweepers), as required by Reclamation. ▪ Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by Reclamation. ▪ All ground-disturbing activities with the potential to generate dust will be suspended when winds exceed 20 miles per hour, as directed by the North Coast Unified Air Quality Management District (NCUAQMD). ▪ Reclamation or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints.			
Impact 4.11-2: Construction activities associated with the project could result in an increase in construction vehicle exhaust emissions.			
4.11-2a Reclamation will comply with NCUAQMD Rule 104 (3.0) Particulate Matter. This compliance could occur through the use of portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).		Reclamation (implementation)	
Impact 4.11-3: Construction activities associated with the project and removal of vegetation could result in vegetative materials that managers will decide to burn.			
4.11-3a Vegetative piles to be burned will consist only of dried vegetative materials. Burn piles will be no larger than 10 feet in diameter. Field personnel will be on site during all hours of burning and materials necessary to extinguish fires will be available at all times.		Reclamation (implementation)	
4.11-3b In general, all requirements of a NCUAQMD "NON-Standard" burn permit will be met for burning. Burn management planning will include but not be limited to the following: ▪ Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined via calling 1-866-BURN-DAY). ▪ Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (<10 mph), and temperature will be low (<80 ºF). ▪ Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
plastic anchored to preserve a dry ignition point. Dry fuel conditions would minimize smoke emissions. ▪ Slash piles will not be constructed on logs, stumps, on talus slopes, within 25 feet of wildlife trees with nest structures, in roadways or in drainage ditches. Piles will not be placed within 10 feet of trees intended to be saved (reserved trees), or within 25 feet of a unit boundary.			
4.11-3c Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.			
Impact 4.11-5: Construction activities would generate short-term and localized fugitive dust, gas and diesel emissions, and smoke that could affect adjacent residences and schools.			
4.11-5a Construction activity occurring within 300 feet of the Lewiston or Douglas City elementary schools will be limited to the period when school is not in session.		Reclamation (implementation)	
4.11-5b Construction activity occurring within 300 feet of residences will be limited to Monday through Saturday, from the hours of 9 a.m. to 5 p.m.			
4.11-5c Reclamation will notify residences within 300 feet of Phase 2 and Remaining Phase 1 project activity and the Lewiston, Douglas City, and Junction City elementary schools of construction activity located near the schools prior to site construction activities.			
4.11-5d Reclamation will ensure that a notice is posted at/adjacent to the rehabilitation sites, which contains a phone number for the public to contact for concerns related to air quality.			
4.12 Aesthetics			
Impact 4.12-1: Implementation of the project could result in the degradation and/or obstruction of a scenic view from key observation areas.			
Mitigation Measures 4.7-1a-c (Vegetation, Wildlife, and Wetlands), which generally describes the Riparian Revegetation and Monitoring Plan that is required, will be implemented where applicable. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands both within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD. Visual impacts related to water quality (i.e., the potential for increased turbidity to adversely affect the aesthetic quality of the river) will be mitigated through implementation of mitigation measures 4.8-3a-f.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.14 Noise			
Impact 4.14-1: Construction activities associated with the project would result in noise impacts to nearby sensitive receptors.			
4.14-1a Construction activities near residential areas would be scheduled between 7:00 AM and 7:00 PM, Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit for variances in construction activity hours, as needed.		Reclamation (implementation)	
4.14-1b Reclamation will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.			
4.14-1c Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (i.e., behind existing barriers, storage piles, unused equipment).			
4.15 Public Services and Utilities/Energy			
Impact 4.15-3: Implementation of the project could result in disruption to emergency services or disruption to school bus routes or student travel routes during construction activities.			
4.15-3a Reclamation will require that staging and construction work, including temporary road or bridge closures, occurs in a manner that allows for access by emergency service providers.		Reclamation (implementation)	
4.15-3b Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.			
4.15-3c Reclamation will coordinate road closures occurring during the school year (mid-August through mid-June) with the appropriate school districts to avoid disruption of school attendance and student access to bus service.			
4.16 Transportation/Traffic Circulation			
Impact 4.16-2: Construction activities would generate short-term increases in vehicle trips.			
4.16-2a Reclamation will post signs during gravel haul activities notifying travelers of trucks entering the roadway. Reclamation will ensure that the gravel trucks maintain a speed limit of 15 mph on residential roads and private roads and operate only between the hours of 7 a.m. and 7 p.m., Monday through Saturday.			
Impact 4.16-3: Implementation of the project would obstruct access to adjacent land uses.			
4.16-3a Reclamation will maintain access throughout the construction period for all private residences adjacent to the project boundary and access roads adjacent to the Trinity River.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.16-3b During the construction phase of the project, Reclamation will limit the amount of daily construction equipment traffic by staging construction equipment and vehicles within the project boundary throughout the work period.		Reclamation (implementation)	
Impact 4.16-4: Construction activities would increase wear-and-tear on local roadways.			
4.16-4a Reclamation will perform a pre-construction survey of local federal, state, and private roads to determine the existing roadway conditions of the construction access routes; and will consult with the relevant agencies/private parties about road conditions prior to construction activity and post construction activity. An agreement would be entered into prior to construction that would detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.		Reclamation (implementation)	
Impact 4.16-5: Construction activities could pose a safety hazard to motorists, bicyclists, pedestrians, or equestrians.			
4.16-5a Reclamation will prepare and implement a traffic control plan that would include provision and maintenance of temporary access through the construction zone, reduction in speed limits though the construction zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of construction workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians and equestrians from construction activities.		Reclamation (implementation)	

This page is intentionally blank

8. Project Design Elements

Project design elements are specific design features proposed by the project applicant and incorporated into the project to prevent the occurrence of or reduce the significance of potential environmental effects. Because project design elements have been incorporated into the project, they do not constitute mitigation measures as defined by CEQA. However, project design elements are identified to ensure that they are included in the MMRP to be developed and implemented as part of the proposed project. The design elements discussed below are common to the proposed project. These elements are excerpted from Chapter 2 of the Draft Master EIR.

9. Description of Common Activities and Construction Criteria and Methods

9.1 Common Activities

9.1.1 Vegetation Removal

Vegetation removal would involve the following:

- Remove vegetation to provide access to activity areas using a combination of manual labor and heavy equipment (i.e., chainsaw, excavator, and vegetation masticator).
- Remove stumps, roots, and vegetative matter to allow river scour on excavated floodplain surfaces. Some large woody debris would be retained for use in the floodplain to enhance fish habitat.
- Dispose of removed vegetation by chipping, hauling offsite, burning, burying within spoil areas as authorized by agencies or land owners, or other appropriate methods. Where authorized, Reclamation buries organic material to increase water holding capacity of alluvial and colluvial materials. Reclamation would continue to work with the Forest Service, BLM, local agencies and landowners to encourage the efficient use of chipping as a priority method of disposing of vegetative waste.
- Protect vegetation designated for preservation within clearing limits. Vegetation outside the clearing limits would be preserved and protected.
- Mechanically remove submerged roots from river fringe areas with ripping bars or excavator buckets. Equipment chassis (i.e., tires, tracks) would remain outside of the wetted portion of the river channel when removing submerged roots.

9.1.2 Water Use

Water would be used at all sites, in accordance with the following:

- Riparian water rights held by public and private landowners on the Trinity River would be used to obtain Trinity River water to support restoration. Dust abatement water would be obtained from onsite seep wells or the Trinity River. When drafting from the Trinity River, pump intakes would be in conformance with criteria established by NMFS and CDFW to prevent impacts to aquatic organisms. Make-up water pumped from the river would pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 fps.

In the event irrigation is necessary for revegetation efforts, the primary water source would be the Trinity River. Any surface water sources used for irrigation would be developed in order to comply with the water rights of land management agencies and landowners. Pump intakes would be in conformance with criteria established by NMFS and CDFW to prevent impacts to aquatic organisms. Make-up water pumped from the river would pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 fps.

9.1.3 Monitoring

The Record of Decision (ROD) provided a restoration strategy for the TRRP but did not identify methods for assessing the effectiveness of the management actions in achieving TRRP goals or management targets. Instead, it directed the TRRP to organize assessments around the principles of Adaptive Environmental Assessment and Management (AEAM) program and to use this to rigorously assess the river's response to management actions. The Integrated Assessment Plan (IAP) provides the basis for applying the AEAM principles outlined in the ROD.

These principles would be applied to quantitatively determine the overall status and trend of river system attributes relative to TRRP objectives, using appropriate data to describe each attribute, with data collected based upon scientifically defensible monitoring designs. The causal relationship between rehabilitation of the fluvial nature of the river and increasing salmonid production would be the major focal point for monitoring and modeling. The focus of the IAP is to identify key assessments that:

- Evaluate long-term progress toward achieving program goals and objectives; and
- Provide short-term feedback to improve program management actions by testing key hypotheses and reducing management uncertainties.

The IAP provides a general framework for integrating and linking assessments across monitoring domains. Integration of assessments would be essential for evaluating the TRRP's overall restoration strategy, involving coordinated actions to support multiple ecosystem processes and components. This integration allows development of coordinated sampling designs and assessments that serve multiple or complementary objectives, and is intended to improve the understanding of qualitative and quantitative functional relationships associated with the mainstem Trinity River.

The IAP framework focuses on six key elements; each of these would be integrated into the MMRP to ensure that authorized activities are consistent with the AEAM. Key elements of the IAP include:

1. Create and maintain spatially complex channel morphology.
2. Increase/improve habitats for freshwater life stages of anadromous fish to the extent necessary to meet or exceed production goals.
3. Restore and maintain natural production of anadromous fish populations.
4. Restore and sustain the natural production of anadromous fish populations downstream of Lewiston Dam to pre-dam levels to facilitate dependent tribal, commercial, and sport fisheries' full participation in the benefits of restoration via enhanced harvest opportunities.
5. Establish and maintain riparian vegetation that supports fish and wildlife.
6. Rehabilitate and protect wildlife habitats and maintain or enhance wildlife populations following implementation.

Additional information on the IAP is available on the TRRP website: *http://www.trrp.net/science/IAP.htm*

9.2 Design Elements

Attachment 1 following the appendices in Volume IV of the 2009 Master EIR is a glossary of design and construction terms for use by the design team.

9.2.1 Hydraulics

The Proposed Project would occur in areas that the Federal Emergency Management Agency (FEMA) has designated as Special Hazard Zones AE and X, as described in Section 3.2 of this document. In the Zone AE areas, Reclamation has established a design criterion stating that not only would the County's floodplain ordinance be followed, but implementation of the Proposed Project would not increase the flood risk for the community. This criterion resulted in a stipulation that coarse sediment and excavated material would be strategically placed to ensure that 100-year flood elevations would not increase over current conditions. As previously described, the site boundaries generally conform to the river corridor, bounded by prominent geographic features such as roads and fences.

The design of the activity areas was based on an understanding of the relationships between the flow regime and the hydrologic/hydraulic characteristics of the action. A fundamental constraint was to *do nothing to increase the flood risk in the general vicinity, and to not raise the water surface elevation above the current FEMA estimated 100-year base flood elevation.* Evaluation of the Proposed Project requires comparing estimated seasonal base flows and estimated return-period flows. USACE's HEC-RAS hydraulic model would be used by the design team during final design activities to predict changes in flood elevations at various points along the project reach. Table F-2 lists the components of the flow regime, the seasonal or other periodic return intervals, and the flow rates that would be used during final design to ensure that the action meets the flood constraints described above.

Table F-2. Estimated Mainstem Trinity River Flow Conditions Used for Design

Flow Description	Flow Event	Flow Rate (cfs)
Summer base flow[a] (July 22 to October 15 of each year)	Q_s	450
1.5-year return interval design flow	$Q_{1.5}$	6,000
Estimated FEMA 100-year flow below Rush Creek	Q_{100}	19,300
Estimated FEMA 100-year flow below Grass Valley Creek	Q_{100}	23,600

[a] Base flow defined as cfs from TRD release and accretion flow
Q = flow rate; Q1.5 = 1.5 year return interval design flow; Q100 = 100-year flood flow; Qs = summer base flow

A HEC-RAS model for the Trinity River from Lewiston Dam to the North Fork Trinity River was developed by California Department of Water Resources (DWR) and provided to the TRRP as part of the administrative record. This model was calibrated to match measured water surface elevations (WSEs) in the Trinity River within and adjacent to the site boundaries for the design flow. Since WSEs have not been measured (validated) for the 100-year flow, the predicted WSEs are based on the output of the model using carefully selected Manning's "n" values that reflect the overbank conditions at each site. The model incorporates empirical data from surveyed cross-sections, including bathymetric and overbank/floodplain topography in the general vicinity of the rehabilitation sites. To obtain WSEs for design flows, the model was calibrated using surveyed WSEs and known flows (from gage data). The model was determined to be accurate for the level of evaluation and design required.

There are several significant flow conditions that are important to the design of the Proposed Project. Two of the most important flow conditions are summertime low flows of about 450 cfs, which is the release from Lewiston Dam, and the 1.5-year-event (ordinary high water) flow of 6,000 cfs, as measured below Rush Creek. The design team regards the design flows shown in Table F-1 as the "best available information" per FEMA requirements. The FEMA Q_{100} "near Douglas City" (38,500 cfs) was established in the 1976 USACE report (USACE 1976) used by FEMA to develop the current FIRMs for the Trinity River. The 6,000 cfs 1.5-year event is based on the ROD flow release. This flow information provides the basis for the designs incorporated into the Proposed Project.

The HEC-RAS hydraulic model was developed and calibrated for the existing conditions to calculate the WSE at various flow releases. The calibration was based on water-surface profiles surveyed at low flow and water profiles and points surveyed at different flows, ranging from 4,500 cfs to 10,000 cfs releases from Lewiston Dam. After the model was properly calibrated, various WSEs were determined for the activity areas and used to develop the design topography. The illustrations at the end of this chapter portray the design topography concepts. The final designs would ensure that constructed surfaces are self-draining in order to minimize potential fish stranding.

9.2.2 Roadway Approaches

As an alternative to disposing of excavated materials onsite, materials may be hauled to commercially approved off-site locations. This option would reduce the impact of spoiling excavated materials in upland habitats. Hauling a portion of excavated materials generated under the Proposed Project could require substantial truck traffic to off-site locations. The traffic would be staged over the project duration, generally between August 1 and November 15. Traffic control measures would be applied in accordance with BLM, Trinity County, and Caltrans requirements.

9.2.3 Recreation Facilities

As appropriate, federal, state, county or private recreation facilities (e.g., parking areas, access trails, picnic areas) affected by project activities would be returned to the same level of service as those offered prior to project implementation. Reclamation, in consultation with the managers and owners of these facilities could enhance one or more of these facilities consistent with project objectives and in compliance with federal, state and county planning requirements. While the Forest Service and BLM have not identified any recreational enhancements, these agencies may require barricades along existing access routes to confine recreational traffic to the existing routes on federal lands.

9.2.4 Drainage

As appropriate, culverts or other drainage structures would be constructed at temporary stream crossings or cross-drainage channels to allow for unimpeded surface drainage.

9.2.5 Rights-of-Way/Easements

Prior to construction, formal realty agreements would be made between Reclamation; land managers for BLM, DWR, and CDFW; and private landowners whose property would be affected. These agreements would clarify the terms and conditions under which Reclamation would work on private property. In addition, these agreements would compensate landowners, based on fair market value of identified construction easements, and would hold property owners harmless during construction activities.

9.2.6 Utilities

There are a number of utility features located within and/or adjacent to the site boundaries. Water intakes, power and telephone poles, and water supply lines parallel or cross the Trinity River in a number of locations. These utilities are considered in the project design to ensure that service would not be disrupted.

9.3 Construction Criteria and Methods

9.3.1 Construction Process Overview

- Vegetation removal would occur as necessary and in compliance with all regulatory requirements. An expected August 1 start date for clearing and grubbing of vegetation would allow completion of nesting by avian species. Alternatively, vegetation may be removed prior to the start of the nesting season, which is early March for this area.
- Where available, existing roads (activity L) would be used to access the activity areas. New access roads and haul routes (activity M) would be constructed when necessary and restored to a stable condition in accordance with landowner/land manager requirements at the completion of the project.[1]
- Excavation would begin on the floodplain to bring it down to grade.
- When specified, finer grained materials (e.g., sand) excavated from riverine activity areas may be stockpiled for use at upland or other riverine activity areas.
- Any riverine treatment areas (e.g., constructed inundation surfaces) that have been compacted from construction activities would be ripped to a depth of approximately 18 inches; no ripping would occur under wet soil conditions. The furrows developed by this ripping would ensure that most storm water runoff is retained and filtered onsite so that there is little or no construction-related turbidity. This action would effectively control the release of storm water runoff and turbidity from the site and eliminate the need for use of post-construction sediment-control measures (e.g., silt fences, berms).
- The timing for work adjacent to the river may be affected by river flows. If for some reason the flow is low when construction starts, but it is anticipated that flows would increase before the floodplain can be excavated, excavation would occur at the lower elevations (adjacent to river) first and at the higher floodplain elevations last.
- In-channel activities, including removal of grade control features and introduction of coarse sediment, would generally take place during low flows (July 15 to October 15 as allowed by the coho salmon in-river work window in NMFS' 2020 Trinity River Restoration Program biological opinion) to create immediate point bars and allow mobilization of in-channel materials at high flows. High-flow coarse sediment augmentation would occur during high flows at various rehabilitation sites described previously. Coarse sediment would be introduced at these high flow sites by pushing gravel into the river with heavy equipment or by using a conveyor system to carry the gravel to mid-channel locations (see Figure 2.3j of the Master EIR). Long-term annual coarse sediment introduction will also replenish material transported downstream from activity areas within the Lewiston-Dark Gulch sites, using either a conveyor or shoreline placement method.

[1] Activity types L and M were included in the 2009 Master EIR but do not apply to this project

- Alcoves and side channels would be constructed from the existing grade down slope. Measures would be taken (e.g., sediment plug, sandbags) to isolate the work area from flowing water. If necessary, pumps would be used to dewater the excavation to inhibit any sediment from entering the river. Typically, reconnecting these features to the river relies on high-flow events. If necessary, the TRRP would remove materials used to isolate these side channels after they have been constructed.
- Final grading would occur as necessary for all activity areas.
- Demobilization of construction equipment and site clean-up would be accomplished consistent with Reclamation requirements.
- Revegetation would take place during wet conditions (fall/winter) and would generally occur in riparian areas to maximize use by fish and wildlife species. Projects would be designed and implemented to achieve no net loss in riparian vegetation (within the project site boundaries) from planting and natural revegetation consistent with the Draft Riparian Revegetation Plan.

9.3.2 In-River Construction

- Where necessary, heavy equipment would be used to grub tree and shrub roots from the edge of the river. Vegetation would often be maintained along the river's active channel to maintain the currently available low-water fish habitat. During root removal, equipment chassis would generally not enter the low-water river channel.
- In-river excavation would generally begin at the far edge of the activity area and work back toward the riverbank so that heavy equipment is on dry land or in shallow water.
- In-river materials or coffer dams may be used to temporarily redirect flow around work areas and to create platforms from which to work. In addition to providing the means for volitional fish passage (upstream and downstream), at least one navigable (by raft/boat) passage through the activity area would remain open at all times.

9.3.3 Traffic Control/Detour

Short-term traffic control is expected and would be in conformance with the following requirements established by the appropriate jurisdictional authority for mobilization and demobilization of heavy equipment or wide-load vehicles:

- Reclamation would coordinate with jurisdictional agencies to identify specific requirements that shall be included for use of existing roadways and haul routes. Requirements may include seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.
- Temporary construction access may be required; access routes shall be of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

9.3.4 Staging Areas

Staging areas and storage facilities for the Proposed Project are shown on Figure 2-1. These areas would be used throughout the duration of the project activities. Some short-term staging and equipment storage and parking would be needed in the activity areas as the project is implemented.

9.3.5 Air Pollution and Dust Control

Efforts would be made to minimize air pollution and reduce greenhouse gas emissions related to construction operations. Reclamation specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. In addition, project contractors would be given educational material about fuel efficiency and the benefits of using vehicles powered by alternative energy sources to enhance awareness of global warming issues. Contractors would also be required to provide recycling bins for on-site waste materials.

Contract documents would also specify that the contractor would be responsible for limiting dust by watering construction site areas used by trucks and vehicles. If water is taken from the river, pump intakes would be in conformance with criteria established by NMFS and CDFW to prevent impacts to aquatic organisms. Make-up water pumped from the river would pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 fps.

9.3.6 Fire Protection and Prevention

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.

9.3.7 Water Pollution Prevention

Reclamation would implement water pollution control measures that conform to applicable and appropriate permits. Reclamation would require the contractor to use extreme care to prevent construction dirt, debris, storm water run-off, and miscellaneous byproducts from entering the stream. Some key water pollution control measures that would be implemented by Reclamation are listed below:

- Every reasonable precaution would be exercised and BMPs would be implemented to protect the Trinity River from being polluted by fuels, oils, petroleum byproducts, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Construction equipment would be cleaned of dirt and grease prior to any in-channel activities. All construction equipment would be inspected daily and maintained to ensure that fuel or lubricants do not contaminate the Trinity River. Spill containment kits would be on-site at all times and, where feasible, berms or other containment methods would be kept in place around the work areas when performing in-channel work.
- Water pollution control work is intended to provide prevention, control, and abatement of water pollution in the Trinity River, and would consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Contracting Officer.
- Deep ripping (18”) of riparian areas that have been compacted during construction activity is expected to minimize or stop delivery of stormwater runoff to the river. As necessary, Reclamation would provide temporary water pollution control measures, including, but not limited to, spill containment booms, dikes, basins, ditches, and straw and seed application, that may become necessary as a result of the contractor’s operations.
- Before starting any work on the project, Reclamation would develop an agency-approved SWPPP to effectively control water pollution during construction of the project. The SWPPP would show the

schedule for the erosion control work included in the contract and for all water pollution control measures Reclamation proposes to take in connection with construction of the project to minimize the effects of the operations on adjacent streams and other bodies of water. Reclamation would not perform any clearing and grubbing or earthwork on the project until the SWPPP has been accepted by responsible agencies.

- Oily or greasy substances originating from Reclamation's operations would not be allowed to enter, or be placed where they would later enter, a live stream, soil, or groundwater.

Appendix G – Aquatic Conservation Strategy Consistency Evaluation

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

1. Introduction

The Bureau of Reclamation (Reclamation), under the auspices of the Trinity River Restoration Program (TRRP), is the proponent for implementing a series of channel rehabilitation and sediment management activities throughout the 40-mile reach of the Trinity River below Lewiston Dam. This evaluation is for the Oregon Gulch site at River Mile 80.9–81.7, as described in Chapter 2 and Appendix D of the Environmental Assessment/Initial Study (EA/IS) for the Oregon Gulch project.

This document evaluates and determines the consistency of the TRRP activities at the Oregon Gulch site with the Aquatic Conservation Strategy (ACS) in the 1994 Record of Decision (1994 ROD[1]) for the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl. The ACS was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The ROD amended the Redding Resource Management Plan (RMP) prepared by the Bureau of Land Management (BLM) in 1994 and is incorporated into the 1995 Shasta-Trinity National Forest Land and Resource Management Plan (STNF LRMP).

The intent of this evaluation is to ensure that decision makers have the information necessary to determine whether the TRRP activities at the Oregon Gulch site are consistent with the ACS objectives. This evaluation incorporates information provided in the Mainstem Trinity River Watershed Analysis (U.S. Bureau of Land Management 1993), incorporates by reference the 2009 Master Environmental Impact Report prepared by Reclamation in cooperation with BLM, and other information in the administrative record to assist the decision maker. In order to make the finding that a project or management activity "meets" or "does not prevent attainment" of the ACS objectives, the decision maker must ensure that management actions that do not maintain the existing condition or lead to improved conditions in the long term would not be implemented.

The ACS states that species-specific strategies aimed at defining explicit standards for habitat elements would be insufficient for protecting even the targeted species. The intent of the ACS is to maintain and restore ecosystem health at both the watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and to restore currently degraded habitats. This approach seeks to prevent further habitat degradation and restore habitat over broad landscapes as opposed to implementing individual projects or focusing on small watersheds. Because the ACS is based on natural disturbance processes, the 1994 ROD recognized that it is a long-term strategy that may take decades, and possibly more than a century, to accomplish all of its objectives.

The ACS contains four components: riparian reserves, key watersheds, watershed analysis, and watershed restoration. Each component is integral to improving the health of the aquatic ecosystems encompassed by the 1994 ROD. A detailed discussion of these components is provided in the ROD.

[1] The Northwest Forest Plan and ROD can be found at https://www.fs.fed.us/r6/reo/library/.

Attachment A of the 1994 ROD includes Standards and Guidelines (S&Gs) that were incorporated as management direction into the BLM Redding RMP and STNF LRMP to ensure compliance with the ROD. This hierarchy of land allocations is described below.

At some locations on BLM managed lands, land allocations overlap. Standards and Guidelines for Congressionally Reserved Areas must be met first. Second, Riparian Reserve S&Gs apply and are added to the S&Gs of other designated areas (e.g., Late Successional Reserves (LSR), matrix). For example, where Riparian Reserves occur within LSRs, both sets of S&Gs apply. In all land allocations, S&Gs in current plans apply where they are more restrictive or provide greater benefits to late-successional forest-related species. For this project, two land allocations are applicable to BLM. These are:

- **Riparian Reserves** – Trinity River and Carr Creek and related areas associated with their respective floodplains; and
- **Matrix** – The matrix consists of federal lands not subject to another land allocation.

The activities proposed by Reclamation under the auspices of the TRRP are confined to a narrow corridor that parallels the Trinity River from Lewiston Dam downstream to Helena, California. This section of the Trinity River is both federally and state designated as a wild and scenic river. Riparian reserve and matrix designations are also used to classify lands within this corridor. This evaluation focuses on Riparian Reserves as defined in the Redding RMP and STNF LRMP.

The following sections of this evaluation address the consistency of the TRRP's Proposed Action (Alternative 1) at the Oregon Gulch site as a single project with the four components of the ACS and the nine ACS objectives described in Attachment B to the 1994 ROD.

2. Components of the Aquatic Conservation Strategy

2.1 Riparian Reserves

The project area contains Riparian Reserves, as defined in the BLM's Redding RMP and the STNF's LRMP. Watershed analyses have been completed by BLM and the Forest Service for federal lands within the Trinity River corridor; these analyses did not modify the designated widths of the Riparian Reserves established in the 1994 ROD S&Gs. The width of the Riparian Reserves essentially correlates with the floodplain of the Trinity River, as well as a buffer around riparian features identified during the wetland delineation process within the project area defined for the Oregon Gulch site. Table G-1 at the end of this appendix shows the S&Gs that were integrated into the project.

2.2 Key Watersheds

There are no key watersheds within or downstream of the 40-mile reach of the Trinity River downstream of Lewiston Dam, although the Forest Service does manage key watersheds in the upper Trinity River watershed primarily associated with the Salmon-Trinity Alps Wilderness Area. This component of the ACS is therefore not applicable to the activities proposed by the TRRP in the Oregon Gulch EA/IS.

2.3 Watershed Analysis

The BLM conducted watershed analyses for the lands within the Trinity River corridor. These analyses did not identify specific recommendations regarding the Riparian Reserve widths; therefore, the S&Gs established under the ACS are applicable to this project. Any activities proposed within these Riparian Reserves will conform to the site-specific conditions established in the S&Gs to ensure consistency with the ACS.

2.4 Watershed Restoration

By its nature, the project is a comprehensive ecosystem restoration project intended to restore the physical processes and biological resources of the mainstem Trinity River. While some short-term impacts may occur to riparian-dependent species, the scale of the activities proposed by the TRRP, including this project, ensures that restoration of ecological processes and functions will be consistent with the ACS.

2.5 Aquatic Conservation Strategy Objectives

The following section evaluates the consistency of the Proposed Action with the nine ACS objectives listed in Attachment B of the ROD.

The lands managed by the BLM within the range of the northern spotted owl will be managed to:

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

The project by its nature is intended to restore the landscape processes, specifically the alluvial and riparian functions, that have been impaired by construction of the Trinity River Division of the Central Valley Project. The activities that are proposed on federal lands subject to the ACS are an integral part of the larger project and are intended to assist the BLM in attaining this ACS objective.

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

Project activities would be implemented in a manner that complements the functional values offered by the Trinity River between Lewiston and Helena. The TRRP, in cooperation with BLM, has been involved in the identification and prioritization of channel rehabilitation sites for a number of years. This project has been designed to acknowledge the interrelationship between aquatic and riparian habitats that occur throughout this reach. Specifically, this project includes a number of activities to enhance the connectivity of aquatic and riparian habitat in the general vicinity of the project area consistent with the overall objectives of the TRRP for the 40-mile reach of the Trinity River downstream of Lewiston Dam. Modifications of floodplains, removal of grade control structures, construction of functional side-channel and off-channel habitat, and augmentation of spawning gravel are examples of restoring connectivity for a variety of aquatic and riparian-dependent species. The intent of this project is to assist the BLM in attaining this ACS objective.

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

A fundamental component of the project is the activities intended to restore the bed, banks, and floodplain of the Trinity River. The modification of grade control, expansion of functional floodplain habitat, construction of side channels, efforts to enhance the coarse sediment supply, and placement of large wood and boulders that provide refugia habitat are examples of the activities intended to restore the physical integrity of the aquatic system. Collectively, these efforts are designed to restore the alluvial habitat and associated riparian character of the Trinity River, which was impaired by reductions in flow and sediment upstream. The intent of this project is to assist the BLM in attaining this ACS objective.

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

By its nature, the project will require removal of vegetation and extensive grading activities, including construction within the active channel of the Trinity River. In 2015, the North Coast Regional Water Quality Control Board (Regional Water Board) reissued three General Permits to the TRRP that provide authorization for channel rehabilitation, fine sediment management, and coarse sediment management activities under Section 401 of the Clean Water Act (CWA). BLM as co-lead agency has also worked closely with the TRRP to ensure that Best Management Practices are incorporated into the project description as environmental commitments to minimize effects on water quality. Compliance with conditions established by the U.S. Army Corps of Engineers (USACE) consistent with the requirements of Nationwide Permit 27 will ensure compliance with Section 404 of the CWA. As proposed, this project would be consistent with the requirements of the Regional Water Board, the BLM's Redding RMP, and the STNF LRMP; it would therefore not prevent attainment of this ACS objective.

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

A fundamental element of the TRRP is restoration of the sediment regime in a manner that enhances the alluvial character of the 40-mile reach of the Trinity River downstream of Lewiston Dam. The Oregon Gulch project would ensure that the coarse sediment fraction of the sediment regime will be replenished on an ongoing basis, consistent with the timing, volume, and rates appropriate for the scaled-down channel. The inclusion of large wood and boulder clusters also increases the functional benefits of gravel augmentation. While there may be a change in the timing or volume of sediment input, overall the project is intended to assist BLM in attainment of this ACS objective.

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

The Proposed Action will not influence any in-stream flows. No modifications to the flow regime of the Trinity River or its tributaries are proposed; therefore, this ACS objective would be met.

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

The activities to modify the bed, banks, and floodplains of the Trinity River within the project boundary are designed to maintain and/or restore the hydrologic connection between the river and adjacent wetland/riparian habitat. By reducing the floodplain elevations, the current flow regime could provide additional opportunities to

establish functional, connected wetland habitat adjacent to the Trinity River. This project would be consistent with this ACS objective.

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

A fundamental objective of the TRRP is to restore the species composition and structural diversity of native plant communities that occur along the mainstem Trinity River. The modifications proposed to the active channel, floodplain, and upland activity areas within the boundaries of the Oregon Gulch site will provide conditions that are receptive to the reintroduction of a diverse assemblage of native riparian vegetation and reduce the potential for non-native, invasive, and noxious plant species. Woody material of various size classes removed as part of the rehabilitation activities will be incorporated into the project as appropriate. Placement of large wood within and/or adjacent to constructed alluvial features will enhance channel complexity and edge habitat. Onsite mulching of vegetative debris will provide effective ground cover and increase the success of revegetation efforts. Overall, this natural recruitment of riparian communities, supplemented by riparian planting efforts, will ensure that this project meets this ACS objective.

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

A fundamental objective of the TRRP is to restore the aquatic, riparian, and upland habitat along the 40-mile reach of the mainstem Trinity River downstream of Lewiston Dam. The project activities emphasize creation and/or rehabilitation of aquatic and riparian habitat within the boundaries of the Oregon Gulch site. Collectively, these activities are intended to generate geomorphic responses downstream that will further the overall habitat enhancement objectives by reestablishing the alluvial processes that were impaired by the construction and operation of the Trinity River Division. The activities that are proposed on federal lands subject to the ACS are an integral part of the overall objective of the TRRP and are intended to assist the BLM in attaining this ACS objective.

2.6 Conclusion

Based on this evaluation, BLM finds that the project described in the NEPA decision document has been designed and would be constructed in a manner that does not prevent future attainment of the ACS objectives. The management actions incorporated into the Proposed Action will maintain the existing condition or lead to improved conditions in the long term, consistent with the intent of the ACS.

Table G-1. Riparian Reserves Applicable Standards and Guidelines

Resource	S&G #	Standard and Guideline
All Land Allocations		
Survey and Manage	2	Survey prior to ground disturbing activities. (Surveys not required as discussed in Appendix H of the Oregon Gulch EA/IS).
Riparian Reserves		

Resource	S&G #	Standard and Guideline
Timber Management	TM 1-c	Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain ACS objectives.
Roads Management	RF-1	Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain ACS objectives.
Road Management (continued)	RF-2	For each existing or planned road, meet ACS objectives by implementing RF2a through f: • RF2a: Minimizing road and landing locations in Riparian Reserves. • RF2b: Completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves. • RF2c: Preparing road design criteria, elements, and standards that govern construction and reconstruction. • RF2d: Preparing operation and maintenance criteria that govern road operation, maintenance, and management. • RF2e: Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. • RF2f: Restricting sidecasting as necessary to prevent the introduction of sediment to streams.
	RF-3	Determine the influence of each road on the ACS objectives through watershed analysis. Meet ACS objectives by implementing RF3a through RF2c: • RF3a: Reconstructing roads and associated drainage features that pose a substantial risk. • RF3b: Prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected. • RF3c: Closing and stabilizing or obliterating and stabilizing roads based on the ongoing and potential effects to ACS objectives and considering short-term and long-term transportation needs.
	RF-4	New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
	RF-5	Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

Resource	S&G #	Standard and Guideline
	RF-7	Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the ACS objectives. As a minimum, this plan shall include provisions for the following activities (RF7a through RF7e): • RF7a: Inspections and maintenance during storm events. • RF7b: Inspections and maintenance after storm events. • RF7c: Road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources. • RF7d: Traffic regulation during wet periods to prevent damage to riparian resources. • RF7e: Establish the purpose of each road by developing the Road Management Objective.
Recreation Management	RM-1	New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting ACS objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of ACS objectives.
Land Use	LH-3	Locate new support facilities outside Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to FERC that ensure ACS objectives are met. Where these objectives cannot be met, provide recommendations to FERC that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves will be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of ACS objectives.
	LH-4	For activities other than surface water developments, issue leases, permits, rights-of-way, and easements to avoid adverse effects that retard or prevent attainment of ACS objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of ACS objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.
General Riparian Area Management	RA-2	Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees onsite when needed to meet coarse woody debris objectives.
	RA-3	Herbicides, insecticides, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of ACS objectives.

3. References

Shasta-Trinity National Forest. 2005. Upper Trinity River Watershed Analysis. USDA Forest Service, Shasta-Trinity National Forest.

U.S. Bureau of Land Management. 1995. Mainstem Trinity River Watershed Analysis.

U.S. Bureau of Land Management. 1993. Redding Resource Management Plan and Record of Decision.

Appendix H – Compliance with Standards and Guidelines for Survey and Manage Species

Trinity River Channel Rehabilitation Site
Oregon Gulch (River Mile 80.9 to 81.7)

This page intentionally left blank

The Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7) project is consistent with court orders relating to the Survey and Manage mitigation measure of the Northwest Forest Plan, as incorporated into the Bureau of Land Management's (BLM's) 1993 Redding Resource Management Plan.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in Conservation Northwest, et al. v. Rey, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of violations of the National Environmental Policy Act (NEPA) in the BLM and U.S. Forest Service (USFS) 2007 Record of Decision eliminating the Survey and Manage mitigation measure. Judge Coughenour deferred issuing a remedy in his December 17, 2009, order until further proceedings and did not enjoin the BLM from proceeding with projects. Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Settlement Agreement, adopted by the District Court on July 6, 2011.

The Ninth Circuit Court of Appeals issued an opinion on April 25, 2013, that reversed the District Court for the Western District of Washington's approval of the 2011 Survey and Manage Settlement Agreement. The case is now remanded back to the District Court for further proceedings. This means that the December 17, 2009, District Court order which found NEPA inadequacies in the 2007 analysis and records of decision removing Survey and Manage requirement is still valid.

Previously, in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation had entered into a stipulation exempting certain categories of activities from the Survey and Manage standard (hereinafter "Pechman exemptions"). Judge Pechman's Order from October 11, 2006 directs: "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

A. Thinning projects in stands younger than 80 years old;
B. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
C. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and
D. The portions of project involving hazardous fuel treatments where prescribed fire is applied.

Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph."

Following the District Court's December 17, 2009, ruling, the Pechman exemptions still remained in place. The BLM has reviewed the EA/IS for the Oregon Gulch site in consideration of both the December 17, 2009, partial summary judgment and Judge Pechman's October 11, 2006 order. Because this site is the focus of a riparian and stream improvement project where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions, the BLM has made the determination that this project meets Exemption C of the Pechman Exemptions (October 11, 2006 Order), and therefore may still

proceed even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage ROD since the Pechman exemptions would remain valid in such case.

Appendix I – Sensitive Species List

Bureau of Land Management
Trinity River Channel Rehabilitation Site:
Oregon Gulch (River Mile 80.9 to 81.8)

This page intentionally left blank

Bureau of Land Management
Sensitive Species List

Table I-1. Sensitive Fish and Wildlife Species, Bureau of Land Management (BLM) Redding Field Office (Updated February 2018)

Scientific Name	Common Name	Status	Assessment[1]
BIRDS			
Accipiter gentilis	Northern goshawk	BLMS	Marginal habitat for this species occurs within the project ESL[2], but it is very unlikely that it would occur because high-quality habitat is present within 10 miles of the ESL; environmental commitment EC-VW-7 would ensure that this species would be protected if present.
Agelaius tricolor	Tricolored blackbird	BLMS	Habitat for this species does not occur within the project ESL.
Aquila chrysaetos	Golden eagle	BLMS	Foraging habitat for this species occurs within the project ESL, but nesting habitat does not. Occurrences are known in the project ESL vicinity. Environmental commitment EC-VW-3 would ensure that this species would be protected.
Athene cunicularia	Burrowing owl	BLMS	Habitat for this species does not occur within the project ESL.
Buteo swainsoni	Swainson's hawk	BLMS	Habitat for this species does not occur within the project ESL.
Grus canadensis tabida	Greater sandhill crane	BLMS	Habitat for this species does not occur within the project ESL.
Haliaetus leucocephalus	Bald eagle	BLMS	Habitat for this species occurs within 1/4 mile of the project ESL, and occurrences are known along the Trinity River corridor; environmental commitment EC-VW-7 would ensure that this species would be protected.
Riparia tabiya ssp. riparia	Bank swallow	BLMS	Habitat for this species does not occur within the project ESL.

[1] All environmental commitments (ECs), incorporated as design features as defined under NEPA, will be implemented in accordance with a project-specific mitigation monitoring and reporting program (MMRP, Appendix F of the Environmental Assessment/Initial Study (EA/IS) for the Oregon Gulch channel rehabilitation site). The environmental commitments are fully described in Appendix E of the EA/IS.

[2] The Environmental Study Limit, or ESL, is the anticipated geographic limit of project activities with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/construction areas, these project activities include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of preconstruction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized as determined appropriate for local conditions, based on data available at the time of its development (e.g., wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.).

Scientific Name	Common Name	Status	Assessment[1]
Strix occidentalis caurina	Northern spotted owl	BLMS	Habitat for this species does not occur within the project ESL.
Strix occidentalis occidentalis	California spotted owl	BLMS	Habitat for this species does not occur within the project ESL.
MAMMALS			
Antrozous pallidus	Pallid bat	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-8 would ensure that this species would be protected.
Corynorhinus townsendii	Townsend's big-eared bat	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-8 would ensure that this species would be protected.
Euderma maculatum	Spotted bat	BLMS	Nesting habitat for this species does not occur within the project ESL but foraging habitat may occur. Environmental commitment EC-VW-8 would ensure that this species would be protected.
Eumops perotis californicus	Western mastiff-bat	BLMS	Habitat for this species does not occur within the project ESL.
Myotis evotis	Long-eared myotis	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-8 would ensure that this species would be protected.
Myotis thysanodes	Fringed myotis	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-8 would ensure that this species would be protected.
Myotis yumanensis	Yuma myotis	BLMS	Habitat for this species does not occur within the project ESL.
Pekania pennanti (pacifica)	Pacific fisher	BLMS	This species is known to occur within 1 mile of the project ESL. Transitory/matrix habitat for this species could occur within the project ESL. EC-VW-8 would ensure that this species would be protected.
AMPHIBIANS			
Hydromantes shastae	Shasta salamander	BLMS	Habitat for this species does not occur within the project ESL.
Rana boylii	Foothill yellow-legged frog	BLMS	This species is known to occur within 1 mile of the project ESL. Habitat for this species could occur within the project ESL; environmental commitment EC-VW-4 would ensure that this species would be protected.
Spea hammondii	Western spadefoot	BLMS	Habitat for this species does not occur within the project ESL.
REPTILES			
Emys marmorata	Western pond turtle	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-5 would ensure that this species would be protected.

Scientific Name	Common Name	Status	Assessment[1]
Lampropeltis zonata	California mountain kingsnake	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-5 would ensure that this species would be protected.
INVERTEBRATES, TERRESTRIAL			
Ancotrema voyanum	Hooded lancetooth	BLMS	Habitat for this species could occur within the project ESL; environmental commitment EC-VW-10 would ensure that this species would be protected.
Helminthoglypta hertleini	Oregon shoulderband	BLMS	Habitat for this species does not occur within the project ESL.
Helminthoglypta talmadgei	Trinity shoulderband	BLMS	Habitat for this species could occur within the project ESL and is known to occur at several locations within 5 miles downstream of the project ESL; environmental commitment EC-VW-10 would ensure that this species would be protected.
Monadenia chaceana	Siskiyou (Chace) shoulderband	BLMS	Habitat for this species does not occur within the project ESL.
Trilobopsis tehamana	Tehama chaparral snail	BLMS	Habitat for this species does not occur within the project ESL.
INVERTEBRATES, AQUATIC - MOLLUSKS			
Anodonta californiensis	California floater (freshwater mussel)	BLMS	Surveys indicate that this species does not occur within the project area.
Anodonta oregonensis	Oregon floater	BLMS	Surveys indicate that this species does not occur within the project area.
Gonidea angulata	Western ridged mussel	BLMS	Surveys indicate that this species does not occur within the project area.
Margaritifera falcata	Western pearlshell mussel	BLMP	Habitat for this species occurs within the project ESL; environmental commitment EC-VW-10 would ensure that this species is protected
FISHES			
Cottus asperrimus	Rough sculpin	BLMS	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including rough sculpin.
Entosphenus tridentatus	Pacific lamprey	BLMS	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including Pacific lamprey.
Oncorhynchus mykiss	Steelhead – Klamath Mountains Province ESU	BLMP	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including steelhead.
Oncorhynchus tshawytscha	Upper Klamath–Trinity Fall-run chinook ESU	BLMP	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including chinook salmon.

Scientific Name	Common Name	Status	Assessment[1]
Oncorhynchus tshawytscha	Upper Klamath–Trinity Spring-run chinook ESU	BLMP	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including chinook salmon.
Oncorhynchus kisutch	Southern Oregon Northern California Coast Coho salmon	BLMP	Habitat for this species occurs within the project ESL; the primary objective of the project is to enhance habitat for anadromous species, including coho salmon.

Note: Common names may not always meet official standards used by various scientific organizations but have been edited for document consistency. Only the first letter of the common name has been capitalized unless referring to a personal or geographic name.

ESU = Evolutionarily Significant Unit

SONCC = Southern Oregon/ Northern California Coast

BLMS = Bureau of Land Management Redding Field Office Sensitive Species

BLMP = Bureau of Land Management Redding Field Office Priority Species

Table I-2. Sensitive Plant Species, Bureau of Land Management Redding Field Office (Updated January 2020)

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
Vascular plants/lichen/bryophytes			
Bent flowered fiddleneck *Amsinckia lunaris*	BLMS/1B.2	Grassland slopes, foothill woodland slopes, and occasionally cut/fill slopes. Elevation: 160–2,600 feet. Bloom: Mar–Jun.	Not known to occur in Trinity County; known from adjacent Humboldt County on the Van Duzen River. Project ESL contains suitable habitat.
McDonald's rockcress *Arabis mcdonaldiana*	FE/CE/1B.1	Lower montane coniferous forest, upper montane coniferous forest. Elevation: 440–5,905 feet. Bloom: May–Jul.	Not known to occur in Trinity County; nearest Humboldt County records are limited to serpentine substrate. Project ESL does not contain suitable habitat.
Konocti manzanita *Arctostaphylos manzanita* ssp. *elegans*	None/None/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 1,295–5,300 feet. Bloom: (Jan) Mar–May (Jul).	Project ESL is outside the known distribution of this subspecies. Project ESL contains suitable habitat.

[3] EC-VW-2 would require any area where disturbance is to occur to be surveyed before ground-disturbing activities commence and protective measures implemented for all sensitive plant species. This environmental commitment would reduce or eliminate impacts to sensitive plant species from project activities. A full description of EC-VW-2 can be found in Appendix E of the EA/IS.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
Shasta County arnica *Arnica venosa*	None/None/4.2	Cismontane woodland, lower montane coniferous forest; often disturbed. Elevation: 1,095–4,890 feet. Bloom: May–Jul (Sep).	Populations are known NE and SW of project ESL, but beyond 10-mile buffer. Project ESL contains suitable habitat.
Indian Valley brodiaea *Brodiaea rosea*	None/CE/1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland. Elevation: 1,095–4,755 feet. Bloom: May–Jun.	Nearby known population at Trinity Lake is outside 10-mile project buffer. Project ESL contains suitable habitat.
Bug-on-a-stick *Buxbaumia viridis*	BLMS/2.2	Large-diameter coarse woody debris in advanced decay stage and inserted directly in perennially wet seeps or streams; riparian habitat in conifer forest. Any elevation below subalpine.	Single occurrence within 10-mile project buffer but over 5 miles from project. Project ESL contains suitable habitat.
Flagella-like atractylocarpus *Campylopodiella stenocarpa*	None/None/2B.2	Cismontane woodland. Elevation: 325–1,640 feet.	Occurrences within 10-mile project buffer but over 5 miles from project. Project ESL contains suitable habitat.
Bristle-stalked sedge *Carex leptalea*	None/None/2B.2	Bogs and fens, meadows, and seeps (mesic), marshes and swamps. Elevation: 0–2,295 feet. Bloom: Mar–Jul.	Meadows in project ESL are not mesic enough to support this species. Project ESL does not contain suitable habitat.
Shasta chaenactis *Chaenactis suffrutescens*	BLMS/None/1B.3	Serpentine soils in montane mixed-conifer forest, including road cuts. Elevation: 4,000 feet. Bloom: Jul.	Limited to serpentine substrate. Project ESL does not contain suitable habitat.
Northern clarkia *Clarkia borealis* ssp. *borealis*	BLMS/None/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 1,310–5,135 feet. Bloom: Jun–Sep.	Project ESL is located beyond the western distribution of this species. Project ESL contains marginal habitat.
Clustered lady's-slipper *Cypripedium fasciculatum*	BLMS/None/4.2	Lower montane coniferous forest, North Coast coniferous forest. Elevation: 325–7,990 feet. Bloom: Mar–Aug.	Nearby occurrences are probably within 5 miles but exact localities are not known. Project ESL contains suitable habitat.
Mountain lady's-slipper *Cypripedium montanum*	BLMS/ None/4.2	Broadleafed upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Elevation: 605–7,300 feet. Bloom: Mar–Aug.	Nearby occurrences are probably within 5 miles, but exact localities are not known. Project ESL contains suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
Oregon fireweed *Epilobium oreganum*	BLMS/None/1B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Elevation: 1,640–7,350 feet. Bloom: Jun–Sep.	Known population about 9 miles SE of project ESL. Meadows in project ESL are not mesic enough to support this species. Project ESL does not contain suitable habitat.
Tracy's eriastrum *Eriastrum tracyi*	None/CR/3.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation: 1,030–5,840 feet. Bloom: May–Jul.	Trinity County populations fall outside 10-mile project buffer. Project ESL contains suitable habitat.
Pink-margined monkeyflower *Erythranthe trinitiensis*	None/None/1B.3	Cismontane woodland, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; limited to serpentine substrate. Elevation: 1,310–7,495 feet. Bloom: Jun–Jul (Aug).	Limited to serpentine substrate. Project ESL does not contain suitable habitat.
California globe mallow *Iliamna latibracteata*	None/None/1B.2	Chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks). Elevation: 195–6,560 feet. Bloom: Jun–Aug.	Project ESL is located beyond the eastern distribution of this species. Project ESL does not contain suitable habitat.
Dudley's rush *Juncus dudleyi*	None/None/2B.3	Lower montane coniferous forest (mesic). Elevation: 1,490–6,560 feet. Bloom: Jul–Aug.	Nearby occurrences are NE and SE of project ESL within 5 miles. Project ESL contains suitable habitat.
Heckner's lewisia *Lewisia cotyledon* var. *heckneri*	BLMS/None/1B.2	Lower montane coniferous forest (rocky). Elevation: 735–6,890 feet. Bloom: May–Jul.	Occurrence nearby 4 miles to NE of project ESL. Project ESL contains suitable habitat.
Wolf's evening-primrose *Oenothera wolfii*	None/None/1B.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest, gravel bars. Elevation: 5–2,625 feet. Bloom: May–Oct.	The only known occurrence within 10 miles of project ESL is historical. Project ESL contains suitable habitat.
White-flowered rein orchid *Piperia candida*	None/None/1B.2	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest. Elevation: 95–4,300 feet. Bloom: (Mar) May–Sep.	Project ESL is located at the eastern distribution of this species. Project ESL contains suitable habitat.
White beaked-rush *Rhynchospora alba*	None/None/2B.2	Bogs and fens, meadows and seeps, marshes and swamps (freshwater). Elevation: 195–6,695 feet. Bloom: Jun–Aug.	Meadows in project ESL are not mesic enough to support this species. Project ESL does not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
Brownish beaked-rush *Rhynchospora capitellata*	None/None/2B.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Elevation: 145–6,560 feet. Bloom: Jul–Aug.	Meadows in project ESL are not mesic enough to support this species. Project ESL does not contain suitable habitat.
Canyon Creek stonecrop *Sedum obtusatum* ssp. *paradisum*	BLMS/None/1B.3	Broadleaf upland forest, chaparral, lower montane coniferous forest, subalpine coniferous forest. Elevation: 980–6,235 feet. Bloom: May–Jun.	Occurrences within 10 miles of project ESL to the W and NE. Project ESL contains suitable habitat.
Coast checkerbloom *Sidalcea oregana* ssp. *eximia*	None/None/1B.2	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Elevation: 15–4,395 feet. Bloom: Jun–Aug.	Project ESL is located beyond the eastern distribution of this species. Project ESL does not contain suitable habitat.
Klamath Mtns catchfly *Silene salmonacea*	None/None/1B.2	Serpentine or iron-rich soils in natural or early-seral gaps in mid to late-seral mixed conifer or mixed conifer-oak forest, including road cuts. Elevation: 2,500–3,800 feet. Bloom: June	Trinity County populations fall outside 10-mile project buffer mostly on serpentine soils. Project ESL does not contain suitable habitat.
Trinity River jewelflower *Streptanthus oblanceolatus*	None/None/1B.2	Cliff and rock outcrops in cismontane woodland. Elevation: 65–1,380 feet. Bloom: Apr–Jun.	Trinity County populations are known from cliff and rock outcrops. Project ESL does not contain suitable habitat.
Beaked tracyina *Tracyina rostrata*	None/None/1B.2	Chaparral, cismontane woodland, valley, and foothill grassland. Elevation: 295–2,590 feet. Bloom: May–Jun.	Project ESL is outside the known distribution of this species. Project ESL contains marginal habitat.

Note: This table includes records of California Native Plant Society (CNPS) special-status species (by habitat and elevation), BLM sensitive species with potential to occur, and California Natural Diversity Database query results if the species has habitat In or near the ESL. Select species are also included from the BLM Suspected/Known from Redding Field Office list (Jan 2020) if habitat occurs or if the project area is within the known species distribution.

[1]Status Codes: FE = Federally listed as endangered; CE = California listed as endangered; CR = California Rare; BLMS = Bureau of Land Management Sensitive

California Rare Plant Ranks (CRPR) Codes and Extensions:

- 1B = Plants rare, threatened, or endangered in California and elsewhere
- 2B = Plants rare, threatened, or endangered in California but more common elsewhere
- 3 = Plants about which more information is needed
- 4 = Plants of limited distribution
  - xx.1 Seriously threatened in California
  - xx.2 Moderately threatened in California
  - xx.3 Not very threatened in California

Appendix J – Wild and Scenic River Section 7 Analysis

Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9 to 81.7

This page is intentionally left blank.

1. Introduction

Section 7(a) of the Wild and Scenic Rivers Act (WSRA) requires the river-administering agency to evaluate the effects of a federally assisted water resources project proposed within a Wild and Scenic River (WSR) corridor on the river's free-flowing condition, water quality, and outstandingly remarkable values (ORVs). The following analysis summarizes the impacts of the Oregon Gulch Channel Rehabilitation Project (project, Oregon Gulch project) on the Trinity River about 1.3 miles south of Junction City, California.

The Oregon Gulch project is designed to benefit anadromous fish. Because the Trinity River intersects Bureau of Land Management (BLM) administered lands at the Oregon Gulch project site, and the BLM has the responsibility to determine whether the proposed Project would have a direct and adverse effect on the river's free-flowing condition, water quality, and/or ORVs.

The Trinity River was designated as a WSR in 1981 under the Federal Wild and Scenic Rivers Act (WSRA). In addition to the mainstem Trinity River from the confluence with the Klamath River to 100 yards below Lewiston Dam, three other sections of the river were designated: the North Fork from the Trinity River confluence to the southern boundary of the Trinity Alps Wilderness Area; the South Fork from the Trinity River confluence to the California State Highway 36 bridge crossing; and the New River from the Trinity River confluence to the Trinity Alps Wilderness Area.

These sections of the Trinity River were designated as WSRs to preserve the anadromous and resident fisheries, outstanding geologic resource values, scenic values, recreational values, and cultural and historical values. The ORV that is specific to the Trinity River section that encompasses the project is its anadromous fishery. Under an interagency agreement between the NPS, the BLM, the BLM generally has the responsibility for conducting WSRA Section 7 determinations for the mainstem Trinity River from Lewiston Dam to the confluence with the North Fork Trinity River. After the designation, BLM classified the mainstem Trinity River as a Recreational River from 100 yards below Lewiston Dam downstream to Cedar Flat.

The proponent for the proposed action at Oregon Gulch (River Mile 80.9–81.7) is the Bureau of Reclamation (Reclamation), under the implementation of the Trinity River Restoration Program (TRRP). Because a portion of the proposed activity would occur on federally-managed lands, BLM serves as a co-lead federal agency along with the TRRP for an environmental assessment/initial study (EA/IS) of the integrated National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) document prepared for this project.

This analysis and the subsequent determination evaluate the effects of the proposed action on the Trinity River's free-flowing condition, water quality, and the ORVs and ensure their protection as required under Section 7 of the WSRA. Because of the length and level of detail provided in the EA/IS, this WSR analysis is presented in summary form and refers the reader to the specific sections of Chapter 3 of the EA/IS for additional information on water quality, fisheries, wildlife, flora and fauna, recreational, and aesthetic values.

2. DEFINITION OF THE ACTIVITY

2.1 Project Proponent

Reclamation, TRRP

2.2 Purpose and Need for the Project

The overarching purpose of the TRRP is to restore fish populations to pre-dam levels and restore dependent fisheries, including those held in trust by the federal government for the Hoopa Valley Tribe (HVT) and the Yurok Tribe (YT). The fundamental purpose of the proposed action is to enhance the fishery and other values provided by the Trinity River in the general vicinity of the Oregon Gulch site by implementing the rehabilitation activities illustrated in Figure 2-1 of the EA (and described in detail in Appendix D, Project Details. All figures referenced in this document are from the Oregon Gulch Rehabilitation Project EA/IS). The Oregon Gulch project is designed to work in concert with and to increase the beneficial effects of the Chapman Ranch Phase A Channel Rehabilitation Project ("Phase A") that was completed in 2020.

Specifically, the proposed action would reestablish complex functional habitat for salmonids and other aquatic organisms (e.g., Pacific lamprey), enhance natural river processes for the benefit of aquatic, riparian, and terrestrial species, and provide conditions suitable for reestablishing native riparian vegetation. The proposed action was one of the original 43 projects listed in the 2000 ROD to restore the Trinity River's fish resources. It is intended to enhance channel complexity and juvenile salmonid refugia habitat (e.g., large shallow, slow areas in proximity to cover) that have emerged as important rehabilitation components due to the TRRP's ongoing monitoring efforts.

As part of the TRRP's Phase 2 channel rehabilitation efforts described in the 2000 ROD, the proposed action is one of about 10 channel rehabilitation projects that the TRRP expects to implement in the next 10 years. These Phase 2 projects are in addition to the ongoing flow/sediment management and watershed restoration elements of the TRRP.

Implementation of the proposed action would incorporate environmental commitments and project design features to ensure that it is consistent with BLM's management goals and objectives for the Trinity River under its Redding Resource Management Plan to support management actions intended to enhance the fishery and recreational ORVs of the Trinity River. The Project is consistent with the Aquatic Conservation Strategy objectives established by the Northwest Forest Plan.[1]

The proposed action was developed through a cooperative effort by the TRRP, BLM, and Yurok and Hoopa Valley tribes. It is intended to improve the conveyance of flows by reestablishing the alluvial attributes of the

[1] USDA, USDI. 1994c. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl: Attachment A to the Record of Decision for Amendments to Forest Service and Bureau of Land Management planning documents within range of the northern spotted owl. p. B-11.

Trinity River, namely floodplains and side channels, while decreasing the potential for channel constriction by modifying floodplain widths and elevations.

2.3 Geographic Location of the Project

The Oregon Gulch rehabilitation site is located approximately 1.3 miles upstream of the Dutch Creek Road Bridge in Junction City, California. It is in Township 33 North, Range 10 West, Section 16, Mount Diablo Baseline and Meridian (MDB&M) (Figure 1-1). The river elevation at the site is approximately 1,500 feet above mean sea level. Access to the project ESL at the river left is via Sky Ranch Road, which intersects with State Route (SR) 299, approximately 1 mile north of the project ESL (Figure 2-1). There will be no access via river right. The project environmental study limit (ESL or the project site)[2] encompasses approximately 134 acres, including 96 acres of BLM land and 38 acres of private land. Throughout this document, the terms "river left" and "river right" are used to refer to the banks of the Trinity River when looking downstream. For this project, the left bank is generally the west and south side of the river and the right bank is the east and north side.

2.4 Duration of the Activities

The proposed activities would take place in two phases. Hauling of excavated materials would begin approximately one year before rehabilitation activities start during the spring of 2021. The rehabilitation construction activities would begin in May or June 2022 and continue through October 2022.

In general, in-river construction and activities other than revegetation could occur on river right between July 15 and September 15. On the left bank, work (e.g., staging site preparation) may occur year-round. Revegetation activities would occur primarily in the wet months. Excavation, processing of excavated material, and placement of excess material in upland areas would occur during the in-river construction window, and floodplain excavation would occur in summer. The Oregon Gulch project rehabilitation activities are proposed for implementation in summer 2022, and revegetation efforts would not occur until after construction, likely beginning in fall 2022 and continuing through spring 2022. Removal of spoils may continue for approximately 1.5 years. After site construction, maintenance activities (including efforts to maintain or enhance vegetation or riverine habitat diversity (e.g., channel topography) may be conducted, as needed, in authorized public land use areas in accordance with the general environmental commitments listed in Appendix E. A detailed discussion of the construction methods and activities is provided in Appendix D.

The flow-release schedule established for a particular water year could limit surface disturbance activities below the ordinary high-water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC-1 and IC-2) could require up to 6 weeks. Revegetation work (e.g., planting of willow pole cuttings and/or container plants and seeding with native grasses) would generally occur during construction, in the wet season (fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities

[2]The Environmental Study Limit, or ESL, is the anticipated maximum geographic limit of project activities (the site boundary). The ESL includes a buffer applied for the purposes of resource identification and associated impact analyses and is the area where pre-project resource surveys are concentrated.

for site maintenance would be conducted post-project as needed during the time period covered by the right-of-way; affected landowners would be notified in advance.

After site construction, maintenance activities, including efforts to maintain/enhance vegetation or riverine habitat diversity, may be conducted, as needed, within authorized public land use areas in accordance with the general environmental commitments listed in Appendix E, Environmental Commitments. For example, structured log jams (SLJs) may be replaced or enhanced within the areas designated for SLJs in the EA.

2.5 Magnitude and Extent of the Project Activities

The magnitude and extent of the activities associated with the project are summarized below. The Description of Alternatives and Appendix D, Project Details, provides an in-depth description of each activity area's design objectives. Except for recontouring and vegetation removal, each activity type and area has been assigned a unique alphabetic and numeric identification and descriptive label that corresponds to the activity area's type and location illustrated in Figure 2-1.

2.5.1 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding of juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the Proposed Action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but, where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the worksite, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 2-1, upland and contractor use areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including contractor use areas, would be used for in-river placement. Large wood would be chipped or masticated for use as organic material to increase nutrients and enhance the water holding for revegetation areas. Activities would be accomplished using various methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and, potentially, scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

2.5.2 Riverine Construction (R) – Lowered Floodplains and Large Wood Structure

Three lowered floodplains (R-1, R-2, and R-3) are separate sections of a single larger valley grade concept that is the foundation for stage-zero restoration design; these floodplains would be constructed to be inundated and function at flows ranging from about 600 to more than 7,000 cfs. Activities associated with constructing these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the channel's surface area that could be inundated by reoccurring flows below the ordinary high-water mark (i.e., 6,000 cfs). Vegetation would be cleared as necessary, and earth would be excavated to meet

design elevations for periodic inundation. See Appendix D, Project Details, for detailed descriptions of activities in these areas.

Together, R-1, R-2, and R-3 represent approximately 16.7 acres of new floodplain that would provide high-quality juvenile rearing habitat at discharge levels that are frequently exceeded during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 334,590 cubic yards of mine tailings and 6,210 of fill. A large wood structure at WP-1 would bifurcate overbank flow streamlines, creating hydraulic variability and local scour and deposition. Interactions between WP-1 and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could take the form of a vegetated island between two-channel anabranches.

Due to their low elevation and large width, the R-1, R-2, and R-3 floodplains are expected to be depositional in some areas and experience scour in other areas. Deposition is expected to be the dominant geomorphic process in the upstream third of R-1, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-2 and R-3, whereas scour is unlikely in those areas due to their positions along the right valley margins. The low elevation of the valley grade surface will also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

These features would increase the likelihood of channel migration resulting in enhanced sinuosity, thereby providing the habitat variability that was historically present and required to support the rapid growth of native fishes. Removal of alluvial material and placement of log jams would be used to create lowered and tiered floodplains, side channels, and ponds. Native riparian vegetation would be planted in newly lowered floodplains.

Newly inundated surfaces would provide important rearing and slow-water habitat for juvenile salmonids and other native anadromous fish and wildlife. They would also increase the likelihood of channel migration that would result in enhanced sinuosity, thereby providing the habitat variability that was historically present and is required to support the rapid growth of native fishes.

These treatment areas would rely on a combination of natural recruitment of native riparian vegetation and riparian planting to establish a more diverse assemblage of native vegetation. Revegetation efforts would be consistent with the requirements and commitments outlined in the TRRP's Draft Riparian Mitigation and Monitoring Plan. This plan requires supplemental efforts (e.g., in-planting, weed control, irrigation) as necessary to establish riparian vegetation to meet the standard of no net loss in riparian vegetation from pre-Project levels.

2.5.3 In-Channel Construction (IC) –Channel, Slough, Wetlands, and Large Wood Structures

The project would include a meander channel complex consisting of a channel (IC-1), a slough (IC-2), and wetlands (W-1 and W-2). Large wood placement would occur throughout the Riverine zone and as a habitat structure at WP-1. Structure log jams would be constructed (SLJ-1 and SLJ-2) at the downstream end of the project. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. Construction of this complex would increase channel length, complexity, and sinuosity and would also increase slope in this section of the channel to facilitate boat passage. Table D-2 outlines the in-channel activities that would occur under the Proposed Action. Excavation of the IC-1 channel would require 181,900 cubic yards of excavation. Locations of IC areas are shown in Figure 2-1, and a detailed description is in Appendix D, Project Details.

The meander complex would provide a diversity of water depths and velocities across a wider range of flows than the existing mainstem channel configuration. Activity area IC-1 would form the meander channel with the two adjacent wetlands (W-1 and W-2) and a slough with a medial bar (IC-2) that would hold slackwater at flows below 600 cfs. Flows greater than about 600 cfs would spill over the channel banks and inundate the R-1 floodplain, generating large increases in wetted area and rearing habitat availability as flows increase through the range of flows typical of the period when juvenile salmon are in the river. The delta area has been losing vegetation due to scour and natural erosion and currently exhibits a single thread low-flow channel. Historically, this area has had more diversity, splitting the flow into two or three channels. The meander complex, wetlands, slough, and wood structures would restore some complexity and promote a dynamic channel morphology.

Spreading the flow over a wide area would greatly reduce unit stream power and sediment transport capacity in the R-1 area. Sediment deposition is expected on all three floodplain features, especially in the upstream half of R-1 and within the IC-1 channel itself. Deposition on the channel bed could further reduce channel capacity, forcing more water onto the floodplains. Simultaneously, irregularities in the floodplain surface could cause flow to concentrate into defined flow paths that evolve into alternative channels. The net results could range from avulsion of the channel to a new location on the floodplain to the formation of a branching delta-like channel network. The precise outcome cannot be accurately predicted, but the as-built terrain is, by intention, almost certain to evolve dynamically in the years following construction.

In-channel construction includes activities in the river under base flow conditions (e.g., 450 cfs) during the in-channel construction window (July 15 to October 15). After September 15, Best management practices would be in place to minimize impacts to adult coho and Chinook salmon. The construction of various types and sizes of grade control structures, including construction or excavation of alluvial features (e.g., sloughs, wetlands), would increase channel complexity through the promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of depositional features (e.g., riffles, bars, and islands) available for spawning and rearing habitat.

During construction of in-channel activity areas, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river, or they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem river post-construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and would ensure that water quality permit requirements are met (e.g., no more than 20 nephelometric turbidity units (NTUs) at 500 feet downstream of construction).

2.5.4 Upland (U) – Constructed Landslide Deposit and Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in an upland area (U-1) as fill on terraces formerly subjected to a variety of placer mining activities and in a constructed landslide deposit area (U-2) that would divert the river from its existing channel into the new IC-1 alignment along the right margin of the valley, as described above. The U-2 area would cover 6.7 acres and require a net fill of about 40,900 cubic yards. U-1 would accommodate approximately 143,000 cubic yards of excavated material. The boundaries of these fill areas were defined using a FEMA-approved modeling process; field verification by surveyors and engineers was performed to ensure these areas would be located at an elevation above the FEMA 100-year floodplain. Within these activity areas, the depth of fill would range from about 1 foot near the edge to as much as 35 feet, depending on the size and location of the activity area. Fill materials would be spread in

uniform layers that would blend in with the natural terrain and provide stable slopes for revegetation. Locations of upland areas are shown in Figure 2-1, and a detailed description is in Appendix D, Project Details.

3. BASELINE CONDITIONS

3.1 Free Flowing Condition

Existing conditions at the Oregon Gulch site have been influenced by historic mining and subsequent flood flow reductions on the Trinity River. The large volume of dredge tailing deposits essentially channelized this reach of the Trinity River and simplified the available habitat for aquatic, riparian, and upland species.

A variety of natural and management disturbance mechanisms have occurred at the site over the past 175 years. The channelization of the Trinity River associated with historic dredge activities was exacerbated by modifications to the flow regime of the Trinity River downstream of Lewiston Dam, beginning in 1964, when the Trinity River Division (TRD) of the Central Valley Project (CVP) became fully operational. In 1981 when the Trinity River was designated as a Wild and Scenic River, the riparian berms had been developing for more than 15 years and were channelizing the river in several locations. Scientists have recognized that the river's alluvial nature had been modified extensively due to changes in the flow regime and sediment flux.

Although changes in the flow regime since 2006 have provided some opportunity to modify the form and function of the river, the Record of Decision (ROD) for the Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Environmental Impact Report (Department of Interior 2000) required the establishment of the TRRP and stipulated that mechanical channel rehabilitation, including management of sediment input (reduction in fine sediments (sand) and augmentation of coarse sediment (gravel)), would be required to reconfigure sections of the river and provide opportunities for alluvial processes to become reestablished, albeit at a smaller scale than had occurred before the construction and operation of TRD facilities (e.g., Lewiston Dam) in 1964.

3.2 Water Quality

Water quality downstream of Lewiston Dam is notably of high quality, and Trinity River water is used to lower the water temperature and improve water quality conditions of the Klamath during low water conditions in late summer. Water 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. Water quality in the Trinity Basin supports municipal and domestic water supplies and beneficial uses primarily associated with sustaining high-quality fish habitat (cold-water spawning and rearing habitat) and recreational pursuits (swimming and boating). These benefits are protected by numeric and narrative water quality objectives defined in the Water Quality Control Plan for the North Coast Region (Basin Plan 2018).

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 (TMDL) 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 the degradation of habitat for anadromous salmonids. The restriction of streamflow downstream of the TRD has contributed significantly to the impairment

of the Trinity River below Lewiston Dam (EPA 2001). Since 2006, TRRP recommended spring flow releases for fisheries have scoured sediment downstream of the TRD and have reduced excess sediment measured in the substrate in areas near Lewiston Dam. Additional information on this topic is available for review in Section 3.11.

Due to the Oregon Gulch site location, the effects of the TRD are less than those documented in TRRP monitoring efforts upstream of Douglas City at about RM 92.6. Data from on-going sediment transport monitoring suggest that below Douglas City, additional streamflow and sediment contributions from Indian, Weaver, and Reading creeks significantly reduce the coarse sediment and streamflow deficits. Below Douglas City, dam releases and natural runoff events are generally capable of transporting sediment influxes.

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, the timing of migration, spawning, rearing, and food availability. Since the construction of the TRD, discharge from Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the type of water year and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

A key objective of the TRRP's flow management is to improve the thermal regimes for all anadromous salmonid life stages that use the Trinity River. The TRRP has been using flow management practices to meet specific temperature management targets, and temperature monitoring data have been collected as part of the Adaptive Environmental Assessment and Management process since 2002. The ESL is located between two water temperature monitoring sites, Douglas City and Junction City, above Canyon Creek.

Water temperatures in the Trinity River through the ESL are primarily influenced by flows, topography, and aspect. Flows in this reach typically exceed the temperature targets for short periods of time in the fall (Magneson and Chamberlain 2015). Currently, river temperature requirements maintain the health of adult spawners. When juvenile salmon and steelhead grow prior to their seaward migration during spring rearing periods, the temperature is often cooler than optimal growth conditions. The extensive mining activities and lack of fertile soil on the right side of the river limit the establishment of riparian forests. On the river's left bank, mature upland forest occurs in isolated stands downslope from steep bedrock slopes. Project activities will plant the flood-plain and amend river-right soils to enhance localized conditions for riparian vegetation so that needed diverse water temperatures may be more available in the reach.

The Trinity River is typically very clear. Oil, gas, and chemical pollutants are generally not measurable, and its flow is often withdrawn to provide drinking water. Natural background turbidity levels range from 0 to 1 nephelometric turbidity units (NTUs) during low-flow conditions (300 to 450 cfs). On May 20, 2015, the Regional Water Board issued a General Water Quality Certification (Order R1-2015-0028) to the TRRP under the auspices of Reclamation. This order implements portions of the Trinity River TMDL and provides an allowable zone of turbidity dilution (protective of sensitive aquatic life), within which turbidity levels shall not exceed 20 NTUs or 20 percent above naturally occurring background levels, whichever is greater. During in-river construction activities, the TRRP will monitor turbidity levels within 50 feet upstream of project activities (i.e., to serve as the natural background level) and 500 feet downstream of the in-river construction activities (point of compliance) that could increase turbidity. If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance shall not exceed 20 percent above the naturally occurring background level.

3.3 Outstandingly Remarkable Values: Anadromous Fish Populations and Habitat

The outstandingly remarkable value identified for this segment of the Trinity Wild and Scenic River is the anadromous fishery. Specifically, the Trinity River supports the Southern Oregon/North California Coast (SONCC) Coho salmon evolutionarily significant unit (ESU), which was federally listed as threatened under the Endangered Species Act (ESA) in 1997. The Trinity River also supports Klamath Mountain Province steelhead trout, Upper Klamath/Trinity River (UKTR) fall-run Chinook salmon, a remnant population of UKTR spring-run Chinook salmon, and Pacific lamprey.

All anadromous salmonid species begin their life in freshwater, migrate to the ocean to rear and mature and return to spawn in freshwater. Although the three Trinity River native species have generally similar life histories, they differ in the time of year they migrate and spawn and when egg incubation typically occurs.

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

The life histories and freshwater habitat requirements of these species and their distinct spawning populations are described in Appendix G of the Master EIR (2009 Regional Water Board and Reclamation; http://www.trrp.net/library/document/?id=476).

The TRRP has prioritized enhancing Trinity River juvenile salmonid rearing conditions through management actions. Juvenile habitat availability and quality were determined to be the limiting factors for salmonid production during early Trinity River habitat evaluations (USFWS and HVT 1999). Current native river salmonid populations are dramatically reduced from historic abundance, and the TRRP is charged with restoring populations to pre-dam levels. Fall-run Chinook salmon are the primary target for tribal harvest, commonly taken by sport fishermen, and arguably the species that would benefit most from the implementation of TRRP management actions. Consequently, chinook salmon numbers are targeted for juvenile population assessments.

Since full implementation of the TRRP began in 2005, there has been a positive trend in the number of chinook salmon fisheries. Increases in Trinity River spring water release volumes, coupled with enhancement of channel habitat (like those proposed in this project), are believed to have increased rearing habitat that has supported this trend. In general, out-migrating naturally produced juvenile chinook numbers have increased from approximately 1 million in the early 1990s to just under 4 million per year currently measured at the Willow Creek rotary screw traps (11 September 2019 TMC presentation in Weitchpec, CA).

Baseline numbers of adult salmon returning to the river are more problematic to interpret than juvenile data as many factors outside of river restoration may impact fisheries escapement to the river. Though habitat restoration in the river may be improving conditions, fishery harvest (ocean and in-river) and poor ocean conditions (e.g., high temperatures or low food abundance) may drastically reduce the number of adults that return to natural spawning grounds and the Trinity hatchery. In general, salmon and steelhead population estimates are cyclical over time; however, general trends may be evident. Since TRRP efforts began, the proportion of spring and fall-

run spawners returning to natural spawning areas has generally increased, but overall numbers have diminished since peak escapement in 1987. Coho salmon numbers have also decreased since the mid-1980s, and the proportion of hatchery spawners has increased. However, steelhead escapement has increased since the mid-1980s, and this is considered the current strongest population of salmonids on the Trinity River. Current Trinity River basin adult escapement goals set by the TRRP for natural-origin adults are 6,000 spring Chinook, 62,000 fall Chinook, 1,400 Coho, and 40,000 steelhead.

The flowing paragraphs summarize current adult run sizes reported in the Trinity River Basin Salmon and Steelhead Monitoring Project: Chinook and Coho Salmon and Fall-run Steelhead run-size estimates using mark-Recapture methods 2017-2018 Season (Kier et al. 2019 available at https://www.trrp.net/library/document/?id=2450).

3.3.1 Spring-run Chinook Salmon 2019 Status Summary

Spawning escapement above the Junction City Weir (JCW) was an estimated 8,032 fish, including the 2.488 spring-run Chinook that entered Trinity River Hatchery (TRH) and 4,352 estimated natural area spawners. The escapement of 1,938 natural-origin adult spring-run Chinook was 32.3 percent of the TRRP goal of 6,000. The 2019 run-size estimate is approximately 51 percent of the 39-year average of 15,882. Estimated spring Chinook run-size had ranged from 2,381 fish in 1991 to 62,692 fish in 1988.

3.3.2 Fall-run Chinook salmon 2019 Status Summary

An estimated 26,848 fall-run Chinook migrated upstream of the Willow Creek Weir (WCW) in 2017. The run-size of 4,446 jacks (precocious fish) and 22,402 adult fall Chinook adults was comprised of an estimated 8,650 natural origin adults, 4,087 natural-origin jacks, 13,752 hatchery-origin adults, and 359 hatchery-origin jacks. An estimated 961 (200 jack and 761 adult) fall Chinook Salmon were harvested, yielding an escapement of 25,887, including the 7,313 fall Chinook that entered TRH and the 18,574 estimated natural area spawners. Escapement of 8,357 natural-origin adult fall Chinook is 13.0 percent of the 62,000 fish TRRP goal.

3.3.3 Coho Salmon 2019 Status Summary

An estimated run-size of 1,486 Coho comprised of 18 natural origin jacks, 42 natural origin adults, 409 hatchery jacks, and 1,017 hatchery adults migrated into the Trinity River basin upstream of the WCW in 2019. A count of 742 entered the TRH, and 744 were identified as natural area spawners. The estimated escapement of 42 natural origin Coho salmon adults was 3.0 percent of the TRRP goal of 1,400 fish. 2019's run-size estimate of 1,486 is approximately 9.5 percent of the 42-year average of 15,633 since 1977. Estimated Coho Salmon run-size had ranged from 655 in 2017 to 59,079 in 1987.

3.3.4 Fall Steelhead 2019 Status Summary

An estimated 5,885 adult fall steelhead migrated upstream of WCW in 2018. Of those, 157 were estimated to have been harvested by anglers. An estimated 5,728 potential spawners, (2,326 natural-origin and 3,402 hatchery-origin) escaped. In the 34 years for which CDFW has data (since 1980), run-size estimates had ranged from 2,972 in 1998 to 53,885 in 2007. Mean estimated run-size for fall adult steelhead in the Trinity River above WCW across the period of record is 14,225 fish. This year's run-size is 41.4 percent of the average. Escapement of 2,326 natural origin adult steelhead is 5.8 percent of the 40,000 fish TRRP goal.

4. WSR ACT SECTION 7(A) EVALUATION STANDARD AND EVALUATION CRITERIA

4.1 Evaluation Standard

The Project will be evaluated to determine if the proposed activities will result in any "direct and adverse" effects on the river's values (free flow, water quality, and ORVs). The Redding Field Manager will approve the determination for the BLM.

4.2 Evaluation Criteria

The following specific criteria were used to evaluate for direct and adverse effects to the free flow, water quality, and outstandingly remarkable values.

4.2.1 Free Flowing Condition

Alteration of within-channel conditions including:

- Active channel location
- Channel geometry
- Channel slope
- Channel form
- Navigation of river

Alteration of riparian and/or floodplain conditions including:

- Vegetation Composition, Age Structure, Quantity, or Vigor
- Relevant soil properties such as compaction or percent bare ground
- Relevant floodplain properties such as width roughness, bank stability, or susceptibility to erosion

Alteration of upland conditions including:

- Vegetation Composition, Age Structure, Quantity, or Vigor
- Relevant soil properties such as compaction or percent bare ground
- Relevant floodplain properties such as width roughness, bank stability, or susceptibility to erosion
- Relevant hydrologic properties such as drainage patterns or the character of the surface and subsurface flows

Alteration of hydrological processes including:

- The ability of the channel to change course, reoccupy former segments, or inundate its floodplain
- Streambank erosion potential, sediment routing and depositions, or debris loading
- The amount or timing of flow in the channel
- Existing flow patterns
- Surface and subsurface flow characteristics

- Flood storage (detention storage)
- Aggradation or degradation of the channel

Magnitude and extent of off-site changes including:

- Changes that influence other parts of the river system including:
    - Range of circumstance under which off-site changes might occur
    - The likelihood that predicted changes will be realized

Processes involved, such as water and sediment, and the movement of nutrients

4.2.2 Water Quality

- Temperature
- Turbidity
- Pollutants (i.e., oil and grease)
- Sediment

4.2.3 Outstandingly Remarkable Values: Anadromous Fish Habitat

The evaluation criteria for the anadromous fisheries ORV are:

- Water temperature
- Water quality (physical, biological, chemical)
- Aquatic habitat
- Geomorphic condition
- Substrate quality
- Nutrient cycling
- Condition of aquatic invertebrate, amphibian and mollusk habitat
- Species composition and diversity
- Fish species population conditions, specifically:
- Anadromous salmonid fish species
- Resident fish species
- Species traditionally used by, and culturally important to Native Americans

This Section 7(a) evaluation addresses the project's potential to have a direct and adverse impact on the anadromous fishery ORV and other values identified by the WSRA. Chapters 2, 3, and 4 prepared for the project provide additional information and analysis on the WSR, water quality, fisheries, wildlife, flora and fauna, recreational, and aesthetic values.

5. ANALYSIS OF EFFECTS TO FREE FLOW

5.1 How the Activity Will Directly Alter Within-Channel Conditions

5.1.1 Position of the Activity Relative to the Streambed and Streambanks

Consistent with the purpose and need described above (Purpose and Need for the project), the TRRP is mandated to reestablish the form and function of the Trinity River in a manner that reestablishes the fishery to pre-dam conditions. The Project will occur within and adjacent to the bed and banks of the Trinity River to improve the functions and values of the river concerning the fisheries ORV, while ensuring the protection of water quality. The Project activities described above (Magnitude and Extent of the project Activities) would change the form and function of the river within and, to varying degrees, downstream of the ESL by expanding floodplain habitat, increasing channel complexity, and reestablishing self-sustaining riparian vegetation.

5.1.2 Potential Project-Related Changes to Free Flow

5.1.2.1 Active Channel Location

The active channel of the Trinity River within the ESL is subject to extreme changes in flow throughout the water year, in part due to the TRRP flow release schedule that is implemented on an annual basis based on water year type. Base flows may be as low as 300 cfs in the fall and often exceed 6,000 cfs in the winter and spring; during wet years, TRRP releases may be as high as 11,000 cfs through this section of the Trinity River. Reducing the elevation of the active floodplain and incorporating alluvial features (e.g., riffles, point bars) within the active channel will provide opportunities for both short- and long-term changes in channel morphology (width, depth, and gradient), therefore increasing the amount and quality of habitat for all life stages of anadromous salmonids. The physical modifications of the project would improve the free-flowing conditions at this site by allowing the river to more frequently inundate and move with its natural floodplain.

5.1.2.2 Channel Geometry

As described above (Purpose and Need for the project), the fundamental objective of the project is to implement activities intended to change the channel geometry in the short term and provide opportunities for continuous dynamic processes within the channel over time in response to ongoing changes in sediment and flow regimes associated with both natural and anthropogenic processes. The project would allow for a more dynamic channel geometry that would increase the amount and quality of habitat for all life stages of anadromous salmonids.

5.1.2.3 Channel Slope

The construction of a meander complex will result in a change in channel slope at a number of locations within the ESL to increase functional habitat for anadromous salmonids, the single ORV on the Trinity River. In some instances, the channel slope will increase to ensure that deposition of sediment does not impact pool habitat. In other cases, decreases in channel slope will enable the river to reestablish alluvial features (e.g., riffles, point bars) necessary for spawning and rearing habitat.

5.1.2.4 Channel Form

The various riverine and in-channel activities, including the incorporation of SLJs, are expected to increase the hydraulic complexity of the flow pattern and sediment flux over a wide array of flows (350 cfs to 11,000 cfs). This habitat complexity is expected to maintain itself via enhanced flow processes and habitat that the project creates. Inundated floodplains and functional side channels will add to this complexity as well as provide opportunities to reestablish functional riparian vegetation.

5.1.2.5 Navigation of the River

The Trinity River provides year-round recreational opportunities, including boating, kayaking, canoeing, rafting, inner tubing, fishing, swimming, camping, gold panning, wildlife viewing, picnicking, hiking, and sightseeing. Fishing for Chinook salmon, steelhead, and rainbow and brown trout is a major recreational activity on the Trinity River throughout the year but is more prevalent between April and December.

BLM issues up to 100 permits for commercial fishing guides along this reach of the river. The Forest Service also issues 13 rafting permits for the river, although most rafting occurs downstream of the ESL. Visitor use in the ESL is generally light throughout the year, with bank fishermen, drift boats, and rafts occasionally transiting the area.

Temporary construction activities associated with the project could pose a physical hazard to recreational users of the river and cause short-term resource damage to lands used for recreational activities in and adjacent to the ESL. Potential physical hazards to recreationists include the presence of temporary river crossings (e.g., A-5, A-5), operation of construction equipment and vehicles in and adjacent to the river, changes in the river's subsurface flow patterns as a result of the in-channel addition or removal of gravel, the addition of wood into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) from construction equipment and vehicles operating in and adjacent to the river.

During Project implementation, public access in the construction area would be limited. Access to adjacent private properties would be maintained throughout the construction period; however, access to the ESL would be restricted to project traffic based on individual agreements with landowners and not available to the public during construction. Public access points to the ESL would be available to recreationists throughout the construction period. Alternative locations for public access are available upstream at Lorenz Gulch and Dutton Creek and downstream at the Sky Ranch and Junction City campground boat launch sites.

An environmental commitment described in Appendix E, Environmental Commitments, requires Reclamation to post precautionary signage and other public notification warning of in-river construction to reduce the hazards to recreational users associated with in-river construction activities. This approach has worked well for previous TRRP projects and has been particularly effective in reducing short-term impacts for in-water recreational activities such as boating and fishing over the past 10 years. In the long-term, natural vegetation and a more sinuous naturally functioning river will benefit river recreation.

5.2 How the Activity Will Directly Alter Riparian and/or Floodplain Conditions

5.2.1 The Position of the Activity Relative to the Riparian Area and Floodplain

As described above, the primary purpose of the project is to make physical changes to the landscape within the ESL that will essentially "take the handcuffs off the river" and allow for dynamic changes to continue over the long-term under the flow and sediment regimes that persist after the construction of the TRD.

5.2.2 Potential Project-Related Changes to Floodplain Conditions

5.2.2.1 Vegetation Composition, Age Structure, Quantity, or Vigor

Figure 3-1 shows the habitat types (based on dominant vegetation type) that are in the ESL. Currently, the riparian vegetation that occurs along the Trinity River banks lacks complexity with respect to composition, age structure, and quality. The sand berm that has developed since the TRD was constructed is occupied by homogeneous stands of willow in narrow stringers with little riparian vegetation along the margins of the floodplain. In addition, the entire corridor was subjected to a variety of placer mining activities, including both hydraulic and dredge operations within the ESL. As a result, the floodplains have increased in elevation over time due to excessive deposition of mine tailings with virtually no soil available to support riparian or upland vegetation other than extensive populations of invasive weeds (e.g., star thistle and Himalayan blackberry).

The Project would lower floodplain elevations to enable alluvial processes to reestablish under lower flows and provide opportunities to reestablish a complex assemblage of native riparian and upland vegetation, including trees, shrubs, and grasses at elevations that enable rooting within the hyporheic zone of alluvial features.

The revegetation efforts described in Appendix D, Project Details, have been developed in conjunction with BLM botanists and fish biologists to ensure that a complex riparian community becomes reestablished within 5-10 years after construction is completed. In addition, the clearing and grading of both floodplain and upland areas are expected to reduce the populations of invasive plants and increase the probability for the recruitment of native plant species along with extensive planting efforts.

5.2.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

With the exceptions of several of the access routes and staging areas, most of the ESL has been disturbed by historic mining activities and to a lesser degree, by periodic flood flows. Before the construction of the TRD, flood flows in this section of the river replenished the alluvial material that allows for soil development over time. The large-scale historic mining activities through the ESL essentially left isolated locations where a soil profile remains intact; however, large portions of the ESL have no soil or vegetation remaining. The amount of revegetation proposed is expected to decrease the amount of bare ground over the long term as riparian and upland vegetation becomes reestablished on the newly constructed surfaces. The nature of the alluvial and upland landscapes subject to Project activities is not conducive to the compaction typically associated with heavy equipment.

5.2.2.3 Relevant Floodplain Properties Such as Width, Roughness, Bank Stability, or Susceptibility to Erosion

As described previously, changes in floodplain properties to enhance habitat for anadromous salmonids (the single ORV) is one of the key objectives of the project. The overall goal of the TRRP is to provide opportunities

for the river to continue to change and adjust to modified flow and sediment regimes required under the 2000 ROD.

5.3 How the Activity Will Directly Alter Upland Conditions

5.3.1 The Position of the Activity Relative to the Uplands

As described in Section 3.5.1 and shown in Figure 3-3, virtually the entire upland portion of the ESL has been subjected to some level of disturbance associated with historic mining activities and/or with rural residences established on private parcels. The Project would use upland areas for placement of excess excavation, access, and staging activities. At specific locations upslope from the left bank, upland vegetation would be removed to provide adequate and safe working conditions for these types of activities. Oregon Gulch contractor use areas on both sides of the river have been previously used during Phase A and would be revegetated after construction activities are completed.

5.3.2 Potential Project-Related Changes to Uplands

5.3.2.1 Vegetation Composition, Age Structure, Quantity, or Vigor

Figure 3-1 shows the type of habitat that occurs within the upland activity areas. As described above, the composition, age structure, and quantity of vegetation within these areas reflect more than 150 years of periodic disturbance associated with historic mining activities (both hard rock and placer) and subsequent occupation and use of both private and NFS lands for a variety of recreational purposes and residential structures. On NFS lands, clearing and grading associated with access and upland activity areas would result in some reduction in mature vegetation, but reclamation of large mine tailing deposits would include revegetation with native trees (conifers and hardwoods), shrubs, and grasses.

5.3.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

The effects are the same as described in the above section entitled “How the Activity Will Directly Alter Riparian and/or Floodplain Conditions.”

5.3.2.3 Relevant Floodplain Properties Such as Width, Roughness, Bank Stability, or Susceptibility to Erosion

As described previously, changes in the floodplain properties to enhance habitat for anadromous salmonids (the single ORV) is one of the key objectives of the project. The overall goal of the TRRP is to provide opportunities for the river to continue to change and adjust to modified flow and sediment regimes as required under the 2000 ROD.

5.3.2.4 Relevant Hydrologic Properties Such as Drainage Patterns or the Character of Surface and Subsurface Flows

The grading plan developed for the upland disposal areas includes topographic features intended to disperse rather than concentrate overland flow. The geologic investigations conducted by the TRRP design team did not identify any sources of surface or groundwater flow within any of the activity areas illustrated in Figure 2-1.

5.3.2.5 Archaeological, Cultural, or Other Identified Significant Resource Values

As described in Section 3.5 (Cultural Resources) of the EA/IS, pre-historic and historic cultural resources occur within and adjacent to the activity areas associated with the project. Close coordination between Reclamation and BLM cultural resource managers resulted in a Project that complies with Section 106 of the National Historic Preservation Act and received concurrence from the California State Historic Preservation Officer.

5.4 How Changes in On-Site Conditions Can or Will Alter Existing Hydrologic Processes

5.4.1 Ability of the Channel to Change Course, Reoccupy Former Segments, or Inundate Its Floodplain

The Project is expected to increase the river's ability to meander and evolve into a more complex and dynamic channel structure. The expansion of functional floodplain accessible at a much wider range of flows, coupled with the development of a low-flow side channel, will promote the reestablishment of morphological response to ongoing changes in the flow and sediment regimes are key elements of the TRRP.

5.4.2 Potential Project-Related Changes to Hydrologic Processes

5.4.2.1 Streambank Erosion Potential, Sediment Routing and Deposition, or Debris Loading

A key objective of the TRRP is reestablishing the alluvial processes that occurred before the construction of the TRD, but at a reduced level of scale and intensity. Changes in bank erosion, sediment flux, and debris loading are viewed as positive outcomes by the TRRP and its partners.

5.4.2.2 The Amount or Timing of Flow in the Channel

The flow regime of this section of the Trinity River is highly influenced by the TRD and releases from Lewiston Dam. Section 3.10 provides an in-depth discussion of this topic.

5.4.2.3 Existing Flow Patterns

The Trinity River is highly regulated through the ESL, particularly under base-flow conditions. The Project would not change the flow patterns in the river within or adjacent to the ESL other than providing opportunities for floodplain inundation, changes in the direction and velocity of flow associated with the new meander complex, and direction of some flow into a new side channel.

Where SLJs and other large wood structures are placed in mid-channel locations, the flow is expected to increase in velocity on both sides and decrease in velocity immediately upstream and downstream. An undetermined percentage of the flow may be directed toward both adjacent banks because of new mid-channel features. However, due to the expansion of the floodplain and shallow bedrock on river left, these banks will be resilient to erosion as revegetation occurs over time.

5.4.2.4 Surface and Subsurface Flow Characteristics

Please refer to the existing flow patterns described above.

5.4.2.5 Flood Storage (Detention Storage)

The existing topographic setting of the ESL is not conducive to flood storage. The reduction in the floodplain elevations would increase the hyporheic connection between the river and shallow groundwater. Planting at the depth where rooted plants can access this hyporheic flow during the growing season would increase the potential for successful revegetation of riparian areas with post-construction irrigation.

5.4.2.6 Aggradation or Degradation of the Channel

The project's fundamental purpose is to reestablish morphological processes that would enhance opportunities for aggradation and degradation of alluvial features in a manner that resembles processes typically associated with an unregulated river but at a smaller scale. River and in-channel activities are intended to jumpstart this process and provide the river with the means to continue these processes over time under the TRRP-managed flow regime.

5.4.3 Estimation of the Magnitude and Spatial Extent of Potential Off-Site Changes

5.4.3.1 Changes That Influence Other Parts of the River System

The Project is likely to affect downstream areas of the river in several ways. The short-term episodic increases in turbidity related to in-river construction and access activities would be noticeable for periods of time ranging from several hours to several days, even though the turbidity levels would not exceed the permit thresholds. High flows following construction are expected to remobilize alluvial material to depositional features downstream, essentially replenishing spawning gravels at other locations. Over time, the various large wood structures will degrade and offer a source of large wood to other areas downstream. The modification of hydraulic conditions within the ESL could have some effect on the channel directly downstream for a period while the channel adjusts to the new configuration. However, these changes are not expected to be significant enough to influence the river downstream of the project reach.

5.4.3.2 The Range of Circumstances under Which Off-Site Changes Might Occur

Increases in turbidity may be visible for several miles for short periods of time before dilution and mixing occur downstream of Canyon Creek, a perennial stream that enters the river about 5 miles below the ESL. The downstream mobilization of large wood could occur periodically for several years; the distance downstream would vary considerably depending on the duration and magnitude of flood events.

5.4.3.3 The Likelihood That Predicted Changes Will Be Realized

It is highly likely that the predicted changes for the project will be realized. Recent TRRP projects intended to restore alluvial processes and benefit anadromous fish habitat in the mainstem Trinity River have resulted in the same changes predicted for this Project.

5.4.3.4 Specify Processes Involved, Such as Water and Sediment, and the Movement of Nutrients

The construction of a meander complex and expansion of floodplain and side-channel habitat, coupled with placement of large wood throughout the ESL, will have short-term effects on how water, sediment (including organic sediment), and nutrient cycling processes are expected to have a beneficial effect on the ORV for the Trinity River in both the short term and long term.

6. ANALYSIS OF EFFECTS TO WATER QUALITY

6.1 Relevant Water Quality Parameters

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 short-term plumes extending downstream of restoration activities will be visible. However, turbidity levels will not exceed 20 NTUs at 500 ft downstream of the project (as permitted by the Water Quality Control Board), thereby keeping turbidity well below levels detrimental to aquatic life and levels experienced during natural winter storm runoff.

Over the years, the TRRP has increasingly conducted in-channel work to create immediate aquatic habitat and to increase conditions where the river flows will enhance functioning river attributes (e.g., backwaters and alternating point bars). Effective construction turbidity control measures will be incorporated to minimize turbidity impacts during construction. These include:

Structural Containment – Use structures such as earth barriers, K-rail containment dams, and silt curtains to isolate turbid water from the active channel. These structures typically remain in place until the riverine features are fully excavated and graded.

Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed and, in some cases, washed to help maintain low turbidity levels associated with the placement of gravel and cobbles in or adjacent to the channel.

Pace of Construction – Controlling the pace of in-channel excavation and placement of alluvial material ensures that sediment input into the water column is consistent with permit requirements. This method requires direct field observations and real-time turbidity construction monitoring.

Flushing – Within structurally contained areas, turbid water is flushed by allowing flow into the work area and regulating the outflow as a function of measured turbidity levels. Small weirs are used to adjust inflow and outflow rates to ensure that permit requirements are met.

Channel Bottom Cleaning – This method entails removing silt- and clay-sized sediment from the channel bottom, typically by pumping or hand excavation. Turbid effluent water is pumped upslope to containment ponds or areas that are subsequently incorporated into site rehabilitation efforts.

7. ANALYSIS OF EFFECTS TO OUTSTANDINGLY REMARKABLE VALUES

Fish in the Trinity River are an ORV. The river supports a number of native and non-native fish and other aquatic organisms. Before installing the TRD, the river provided habitat for numerous anadromous fish species, including Chinook salmon, Coho salmon, steelhead trout, and Pacific lamprey. A fundamental objective of the TRRP is the restoration and enhancement of the Trinity River fishery.

Although it is generally recognized that the alluvial features existed on the date of designation, the transitory nature of riverine environments precludes the ability to quantify these features fully. The extensive body of

scientific evidence available for the Trinity River suggests that the riparian berms and floodplain features had extensive riparian communities that were well established on the date of designation.

7.1 Water Temperature

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, the timing of migration, spawning and rearing, and the availability of food. Before full implementation of the ROD in 2005, up to 90 percent of the natural Trinity River flow was diverted to the Sacramento River basin through facilities associated with the TRD. Beginning in 1964, water quality in the Trinity River, particularly its temperature and sediment regimes, were substantially altered. 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 degrees Fahrenheit [°F]). These temperatures are transmitted through Lewiston Reservoir to the Trinity River below Lewiston Dam. Although the proposed action would remove riparian vegetation, this action is not expected to have a negative impact on water temperatures in the river.

Water temperatures in the Trinity River through the ESL are primarily influenced by flows, topography, and aspect. Flows in this reach typically exceed the temperature targets for short periods in the fall (Magneson and Chamberlain 2015). The Oregon Gulch reach is oriented in a northeast-southwest direction with very little shade provided by topography or riparian vegetation. The extensive mining activities and lack of fertile soil on the left side of the river limit the establishment of riparian forests. Mature upland forest occurs in isolated stands on both sides of the river. Overall, the project is expected to provide a neutral to beneficial effect on the ESL's temperatures within and downstream, both short term and long term.

7.2 Water Quality (physical, biological, chemical)

The activities incorporated into the project have been developed to meet the objectives described in the EA/IS and are intended to reestablish functional fluvial and alluvial processes in and to some extent downstream of the ESL. In the following discussion, the environmental consequences of the project on water quality and the associated beneficial uses of the Trinity River focus on three water quality parameters: sediment, temperature, and turbidity.

Due to the extremely low background turbidity levels during low-flow conditions, reduction of these turbidity levels to within 20 percent above background is generally not feasible, even with the environmental commitments listed in Appendix E. However, short-term increases in turbidity levels that occur during permitted restoration activities are generally not considered to be biologically detrimental to aquatic organisms because the duration of these increased levels is short (several hours), and fish are able to move away from the activity area. Monitoring turbidity increases during the implementation of previous TRRP projects has shown that periods of increased turbidity are brief (generally less than 24 hours) at monitoring points located 500 feet downstream and that beneficial uses continued to be protected. Also, the quantity of fine sediment introduced to the river during activities at low flows is typically small and is restricted to timing and location; furthermore, not all activity areas are experiencing disturbance at the same time.

The consequences of the project on water quality associated with in-channel activities and the lowering of floodplains would change the location and nature of sediment in and adjacent to the low-flow channel. The placement of spawning-sized gravel at river crossings necessary to access the activity areas on river left would be sized to ensure that it would mobilize during high flows in the first year following construction and provide some

augmentation of spawning habitat downstream. As described in the EA/IS and Appendix E, Environmental Commitments, the environmental commitments and design measures would be incorporated into the construction contract to minimize the potential for hazardous materials (e.g., hydraulic fluid) to leak into the river at locations where equipment is working in the water. These commitments and measures would be adequate to protect the beneficial uses of the Trinity River.

The activities incorporated into the Oregon Gulch project are intended to reconnect the existing floodplains with the channel, which would result in shallow depths and slow velocities across a broader range of stream flows than those currently being provided. Other activities incorporated into the project would increase the complexity of the channel to increase habitat for all life stages. Due to the location and aspect of the river in the ESL, water temperature in the river below Lewiston Dam is heavily influenced by flow releases from the dam and input from tributaries downstream. The northeast-southwest orientation of this reach also influences the degree to which afternoon shading affects water temperature.

The Project would include clearing and grading a number of activity areas, some of which have some riparian vegetation. Functionally, the existing riparian vegetation has little influence on water temperature through this reach, but it does provide shaded riparian area habitat for aquatic organisms at isolated locations along the channel margin. While there would be some localized effects on water temperature because of clearing and grading activities, the main channel's realignment (IC-1) and lowering of the floodplains (R-1, R-2, R-3) are expected to help establish and recruit riparian vegetation. Revegetation efforts associated with these activities would increase functional riparian vegetation, which in turn would increase shade and improve habitat for juvenile salmonids along the margins of these features under a wide range of flow conditions, including those that may occur during late-summer releases when air temperatures are high.

The activities described in Appendix D, Project Details, would temporarily increase turbidity and total suspended solids in the Trinity River. Incorporating the environmental commitments listed Appendix E, Environmental Commitments, in conjunction with the design elements, and construction criteria (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit turbidity suspended sediments in the Trinity River. Additionally, the river’s edge and in-channel construction activities would be staged to minimize potential turbidity effects. During in-channel construction activities, increases in turbidity levels could occur because of the excavation of alluvial material. Connection of isolated and newly constructed side channels (e.g., during the first flush of flowing water) would result in short-term increases in turbidity levels as this material is removed from and/or redistributed downstream. Fine sediments may be suspended in the river for several hours following construction activities; however, the project would be compliant with the conditions of the Program’s General Water Quality Certification and is not expected to have a negative impact on beneficial uses.

The extent of downstream sedimentation would be a function of the size and mobility of the substrate. For example, fine-grained sediments such as silts and clays can be carried several thousand feet downstream of construction zones, while larger-sized sediments such as coarse sands and gravels tend to drop out of the water column within several feet of the construction zone. Collectively, the project's activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially violate the Basin Plan objectives for turbidity in the Trinity River.

In conjunction with the construction of R and IC activity areas, channel crossings would be used at A-5, A-6, and A-9 using temporary fords. Placement of alluvial fill materials could temporarily increase turbidity and suspended materials during and immediately following crossing construction. Removal and distribution of alluvial materials

upon deconstruction of the low-flow channel crossings could also increase turbidity and suspended materials during and immediately following excavation.

7.3 Aquatic and Riparian Habitat

The Trinity River Flow Evaluation Final Report (U.S. Fish and Wildlife Service and HVT 1999) determined that lack of spawning and rearing habitat for juvenile salmonids is likely a primary factor limiting the recovery of salmonid populations in the Trinity River. Activities associated with the proposed action within the ESL are specifically designed to increase the abundance of habitat for Trinity River salmonids by reconnecting the river with its floodplain, increasing channel sinuosity, creating complex off-channel aquatic and riparian habitat, and providing shallow low-velocity habitats near the river's edge.

The Project is designed to restore the Trinity River's alluvial processes within the 0.8-mile reach associated with the Oregon Gulch site. As described in Chapter 3, increases in salmonid fry capacity by up to 114 percent under low-flow conditions (350 cfs) and up to 1,040 percent under moderate flows (800 cfs). Presmolt capacity would increase by 94 percent at low-flow conditions and by 819 percent at high-flow conditions (4,800). As described in Appendix D, Project Details, about 9.0 acres of meander channels and slough would be constructed, and 16.7 acres of the floodplain would be enhanced and/or improved as a result of the proposed action.

The 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 in the ESL and increase the potential for sediment delivery to the Trinity River. As discussed in the EA/IS, Water Quality section, the project would result in some project-related effects on erosional processes and changes in the sediment regime within the ESL and to a limited extent downstream. The excavation and placement of alluvial materials within the channel and associated floodplain of the Trinity River would result in changes to the amount and character of sediment that may be mobilized post-construction.

In the IC and R activity areas, processed alluvium (gravel and cobble) would be placed within and adjacent to the low-flow channel in a manner intended to increase spawning and rearing habitat for Coho salmon and other salmonids. However, the environmental commitments listed in the above paragraph have been incorporated into the project to minimize the release of fine sediment into the water column during or following construction and to reduce the impacts to existing spawning and rearing habitat for short periods of time, primarily in conjunction with elevated turbidity levels. The placement and use of several low-water fords in the Trinity River would require increasing the amount of coarse sediment at several shallow riffles during in-river construction windows, possibly for several months. The presence and use of the fords across the Trinity River would occur at locations occasionally used by salmonids as spawning and rearing habitat. Proportionally, these fords would occupy a small percentage of the available habitat in the project reach during construction.

The Project's rehabilitation activities are intended to enhance the wetland, riverine, and upland areas for wildlife and fish. The Project would convert almost 17 acres of non-riparian areas (e.g., terrace deposits) to the floodplain and riparian habitat within a 3- to 5-year post-project time frame. Temporary disturbance of these habitats in the ESL during project implementation would occur in conjunction with vegetation removal, grading, and other construction activities. Populations of invasive plants will be removed to expand floodplain habitat for salmonids and other aquatic organisms.

Throughout the ESL, activity areas were refined to avoid wooded areas where possible; however, several activity areas require the use of upland areas and would include the removal of conifers and other hardwood tree species.

Tree removal (e.g., hazardous trees) outside these activity areas would be limited and would be subject to site-specific review and authorization by BLM before removal to enhance habitat complexity, provide safe working conditions, and facilitate access. The project is intended to reduce the existing populations of noxious weeds and invasive plant species through grading, clearing, and revegetation activities and periodic flooding of newly constructed floodplains. During the rehabilitation activities, control measures for invasive plants (e.g., star thistle, Himalayan blackberry, didymo (Didymosphenia geminate)), including using weed-free erosion control materials and washing equipment, would be implemented per environmental commitment EC-VW-9 (see Table E-1 in Appendix E) to prevent the spread of noxious weeds in the ESL. Areas contaminated with known occurrences of didymo would be avoided. If no uncontaminated areas are available for water drafting, water drafting equipment will be cleaned by approved methods prior to drafting water from an uncontaminated location. Didymo-infested water shall be discharged away from a water source or from the same source where it was taken.

Some trees and downed logs would be reused on-site to establish wood jams and structures along the river. Riparian and wetland habitats would be protected outside the activity areas and would be clearly marked for avoidance in accordance with EC-VW-1[4.7-1a] outlined in Appendix E, Environmental Commitments. Special-status plants have not been found in the ESL and would not be affected by the rehabilitation activities.

Implementation of the project would result in direct impacts (i.e., impacts associated with work in the proposed activity areas) on up to 7.0 acres of montane riparian habitat and 5.9 acres of valley foothill riparian habitat, for a total of 12.9 acres. The construction and use of temporary access and temporary activity areas (i.e., access roads, contractor use areas, and river crossings) would result in up to 16.1 acres of temporary impacts, which include up to 11.2 acres of montane riparian habitat and 4.9 acres of valley foothill riparian habitat. All disturbed areas from project activities will be revegetated with native species. Because of the nature of the project, the impacts to riparian habitat from construction associated with access and staging areas would be temporary, and the riparian habitat is expected to recover over time. Figure 3-3 shows the size and location of the riparian habitat that would be affected.

Construction activities associated with the project would result in temporary impacts to waters under the jurisdiction of the Corps (jurisdictional waters), which include the Trinity River and the wetlands and streams in the ESL. Figure 3.4 illustrates the size and location of waters of the United States that would be affected by the project. Construction activities associated with the temporary access routes and use of activity areas (e.g., roads, staging) as part of the project would temporarily affect up to 0.5 acres of lacustrine area, 0.2 acre of emergent wetlands, 0.7 acres of perennial stream, less than 0.1 acre of intermittent stream, and 2.5 acres of riparian wetlands. Approximately 3.5 acres of riparian wetlands, 0.2 acres of emergent, 1.4 acres of lacustrine habitat, and 3.3 acres of riverine habitat, would be permanently affected as a result of the rehabilitation activities. However, because of the nature of the project, it is anticipated that there will be a net increase in jurisdictional waters within 5 to 10 years after the implementation of the project.

As described in Appendix D, Project Details, and the EA/IS, both planting and natural recruitment of native species are planned for the revegetation of the riparian and upland areas under the project. These revegetation efforts would follow TRRP's 2016 Draft Riparian Mitigation and Monitoring Plan and would incorporate BLM's requirements, and other cooperating, responsible, and trustee agencies and landowners. Revegetation will result in the reestablishment of native vegetation in all areas where project disturbance has occurred.

Although the majority of the pre-construction site is denuded of vegetation because of the deep layers of mine tailings, the reconstruction of the floodplain will result in the removal of approximatlye12 acres of vegetation. Most of the vegetation to be removed occurs on mine tailings between 4 and 30 feet above the historic floodplain

elevation in the R-1, R-2, and R-3 activity areas. Existing vegetation at or below the final constructed elevation will remain in place. The new floodplain will be quite different from existing conditions. Monthly mean flows will inundate the entire 18-acre floodplain until July during the first few years after construction, until the river reconfigures the site, increasing surface heterogeneity over time. The water table will be readily available for much of the growing season. The new floodplain's surface elevation will be less than one foot above the water surface elevation at 450 cfs.

The removal of mine tailings and subsequent reconstruction of the project site will result in several new landforms that require revegetation; a new large upland feature (6.6 acres) and new floodplain landforms (18.1 acres) that include existing ponds, wetlands, and forested islands. The remaining 9.0 acres do not require revegetation as they will become in-channel features. Planned revegetation would include 158 willow clusters, 215 cottonwood clusters, 438 transition clusters, 387 upland clusters, 24 brush piles, 616 feet of willow trenches, 6 beaver dam analogs (each at 25 ft long), and 48 willow clumps. A total of 20.7 acres of riparian habitat would be functional in 5 to 10 years after completing the project. Based on the impact tables in Figure 3-4, the project would meet the TRRP's objective of no net loss of riparian habitat in the long term.

Revegetation in the new floodplain would consist of live-stakes of willows, cottonwoods and red-osier dogwoods. Oregon ash will also be planted in select areas. The upland landforms would be planted with species suited to dry, hot conditions. Willow clumps (rooted clumps of willow excavated from the project site) would be installed along wood features designed to resist erosion and cottonwood poles in deep layers of fill material used to construct the upland plug. In addition to the woody plantings, native herbaceous plants (forbs and graminoids) will be seeded to provide additional native plant diversity, cover, and prevent invasive, exotic species colonization. An upland seed mix and a riparian seed mix for the floodplain will be used. This revegetation design represents the surrounding vegetation communities and provides a buffer to complement and protect remnant riparian vegetation. The broad new floodplain will provide high-quality riparian habitat and cover more area compared to the existing linear floodplain vegetation that currently exists on site.

The revegetation design prescribes revegetating up to 15.3 acres with tree and shrub plantings and seeding 28 acres. Revegetation will be achieved using a combination of bareroot trees and shrubs, some nursery container stock, live cuttings, poles, and native seed (including acorns). Irrigation and mulch may be used to increase plant survival in the uplands. Plant installation will vary. Willow clumps will be installed during construction of U-2 during the summer months. Live-stakes and poles will also be installed during floodplain construction. River right floodplain landforms will be planted later in the fall to increase live-stake survival. Planting of bareroot and container stock will occur after construction during the winter dormant season. Seeding will occur in the fall on the upland plug and in late spring/early summer after flows subside on the floodplain.

Exposed soils in 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 Oregon Gulch project design; therefore, it is expected that excavation and operation of heavy equipment would re-suspend silt and sand, resulting in localized and temporary increases of suspended sediment and turbidity. The operation of heavy equipment in the active channel during these activities would likely re-suspend streambed sediments. Any juvenile salmonid salmon rearing in the area during in-channel construction could be temporarily displaced or their social behavior could be temporarily disrupted by turbidity created during this activity.

Erosion and deposition of fine sediments associated with the implementation of the project are expected to be localized and temporary. Some fine-textured sediment may settle near or on a spawning habitat located downstream of riverine activity areas, but this sediment is not expected to impair redd excavation or spawning

activities. Excavation, grading, and coarse sediment addition within the channel would occur only during low-flow conditions between July 15 and September 15 prior to the spawning period. In-river work, including the construction of temporary crossings, may temporarily displace adult salmonids using holding habitat within the ESL to other holding habitat either upstream or downstream of the project reach due to transient turbidity and short-duration sediment plumes created by construction activity. Juvenile salmonids using this reach during this timeframe could also be temporarily displaced, or their social behavior could be temporarily disrupted due to increases in turbidity or suspended sediment. Even temporarily, behavioral disruption could result in some increased vulnerability to competitive interactions or predation for salmonids. These temporary impacts were anticipated and addressed in the August 2020 Trinity River Restoration Program Biological Opinion (BiOp), which describes the implementation strategies and conservation measures that will be employed during the proposed TRRP construction at the Oregon Gulch project.

Adult Pacific lampreys migrate upstream from spring through early summer 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. In addition to ammocetes occupying alluvial substrate, freshwater mussel populations occur at locations through the ESL. Mussel beds observed within the boundaries of in-channel activity areas will be flagged for avoidance and, to the extent feasible, individuals will be relocated to nearby appropriate habitat that would not be disturbed (see EC-VW-10). Some mussels and lampreys may inadvertently be physically displaced during construction; this effect would be minimal to either species due to the large populations known to occur at other locations that would be protected within the ESL as well as upstream and downstream.

The environmental commitments incorporated into the project would be implemented in conjunction with the construction activities described in Chapter 2. In addition to the typical practice of refueling construction equipment at upland activity areas, the project also includes activities that would result in mechanized equipment (e.g., trucks, excavators) crossing and/or operating in 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. Without rapid containment and clean up, these materials could be toxic, depending on the spill's location in proximity to water bodies in the ESL. Oils, fuels, and other contaminants could have short-term effects on the various life stages of salmonids and other anadromous fish using habitat near construction activities; however, this effect is not anticipated to negatively affect individual organisms or populations.

Coho salmon and other special-status aquatic species also occur in the Trinity River, and suitable salmonid rearing habitat is used in the ESL year-round. Adult Coho and other salmonids migrate through the ESL 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 and other salmonids could occur during in-river construction and construction of the low-flow channel crossings. These in-water work activities would be conducted only during late-summer low-flow conditions (e.g., July 15 to September 15), thus minimizing the potential for direct mortality to rearing Coho and other salmonids because this period corresponds to a time of the year when the fewest number of juvenile salmonids are known to occur in the project reach.

National Marine Fisheries Service (NMFS) expects that all displaced juvenile fish, including Coho salmon, would find suitable habitat in river reaches upstream or downstream of the project reach because juvenile rearing habitat in the mainstem Trinity River is likely under-saturated during summer and fall months (National Marine Fisheries Service 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 during rapidly receding flood-flow periods in the winter and early spring when fry are emerging. Although stranding of fry under such receding flood conditions occurs naturally, the constructed features could increase the potential for stranding. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk. Table 1 shows the estimated fry and presmolt salmonid capacity that would be provided after implementation of the project as flows increase through the project reach.

Table 1. Estimated Fish Capacity (Total Number of Fish) for the Oregon Gulch Rehabilitation Site at Existing and 90 Percent Design Conditions

Discharge	Existing Fry	Existing Presmolt	Design Fry	Design Presmolt	Percent Increase Fry	Percent Increase Presmolt
350	2,066,426	542,251	4,415,513	1,052,714	114	94
450	1,898,467	528,892	4,740,872	1,159,337	150	119
600	1,696,684	510,465	16,959,808	3,041,313	900	496
800	1,542,588	498,925	17,590,396	3,327,916	1,040	567
1,200	1,397,962	490,081	15,350,484	3,384,612	998	591
1,800	1,337,247	484,635	14,054,960	3,744,610	951	673
2,500	1,387,653	501,426	13,404,804	4,219,898	866	742
3,500	1,513,884	555,522	13,174,571	4,887,795	770	780
4,000	1,611,942	585,747	12,990,963	5,236,235	706	794
4,800	1,791,810	633,893	12,951,779	5,825,820	623	819

As indicated in Table 1, the project would result in an increase in fry and presmolt capacity in the project reach over a range of flows. These increases in capacity for extremely young fish can be critical for their survival. The project is not expected to have a long-term effect on the amount or utility of holding habitat for adult salmonids. These beneficial effects will also apply to varying degrees to other aquatic organisms that use habitat in this reach.

7.3.1 Geomorphic Condition (Sediment Transport and Substrate Quality)

The 0.8-mile-long reach of the river in the ESL is characterized by a relatively wide alluvial valley bottom, relatively low water-surface slopes, low sinuosity, and simple channel geometry. The channel is almost exclusively single-thread, with some evidence of riffles, bars, or similar topographic elements. Sinuosity is low, with channel curvature being almost entirely driven by valley confinement at the Oregon Gulch confluence. The relatively low slope and simple channel geometry that dominate the area are linked to historical mining activities. Historical mining impacts, large floods, flow regulation, and continued delta building have created the contemporary site geomorphology found today.

An unconstrained valley bottom width characterizes the Oregon Gulch project area ranges from 600 feet to 1,700 feet wide. Dredger tailings piles occupy up to 75 percent of that width and eliminate the river's ability to access most of the valley. The river is not in direct contact with the valley walls except at the upstream site boundary (RM 81.68) and a bedrock outcrop on river left at RM 80.9. Hydraulic mining caused significant aggradation so the depth to bedrock is anticipated to be at least 10 feet or more. The slope upstream of the Oregon Gulch delta is

low compared to the average river slope along the entire 40-mile restoration reach. The slope steepens as the river drops 7 feet from the upstream end of the Oregon Gulch delta (RM 81.2) into Sky Ranch (RM 80.9). The terrace deposit surface is 10 to 15 feet above groundwater (elevation 1464.3 to 1465.9 feet). The terrace deposit consists of poorly graded gravel with sand. The terrace deposits are sometimes overlain with a surface layer (0.7 feet thick) of silty sand to sandy silt.

The substrate in the Oregon Gulch site varies from silt to 10 inches in diameter. The Oregon Gulch site is mostly comprised of dredge material, with some areas of alluvial floodplain deposits, and ranges in size from silty sand to large cobbles.

At the downstream end of the project site, Oregon Gulch discharged millions of cubic yards of mining debris from hydraulic mining at the LaGrange Mine on Oregon Mountain over 60 years ending in the 1930s. Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively, and the dredge tailing deposits are evident on the right side of the river throughout the ESL. Essentially the floodplain soils in the area were removed by historic mining. Floodplain soils will be enhanced both via placement of materials during construction and as flows deposit sediment in newly lowered locations.

Flows in the Trinity River downstream from Trinity and Lewiston dams have been regulated since Trinity Dam was closed in 1960. Diversion of up to 90 percent of the Trinity River to the Sacramento River basin in the 1960s and 1970s led to substantial geomorphic changes in many locations along the Trinity River, with the predominant responses being channel narrowing and vegetative encroachment along the channel margins (USFWS and HVT 1999). Although flow regulation has certainly influenced current conditions, larger-scale historical mining impacts are also important drivers of recent geomorphic evolution in the ESL.

A newly created side channel and expansion of floodplain inundation (in terms of both timing and area) would enhance the alluvial nature of this section of the river through the removal of excess dredge tailings and soils that have accumulated over the years. Some fill would be placed within and along the floodplain to create bars and riffles, realign the main channel, and allow inundation of the floodplain at lower flows. Overall, increases in floodplain habitat and vegetation, expected as the project develops over time, will provide direct habitat benefits for fish and will also enhance invertebrate production that will serve as food for all aquatic species.

Surface and subsurface geology and soil conditions in the activity areas were evaluated as part of the design process. The types of alluvial material (e.g., cobble, gravel, fines) available for the rehabilitation activities were characterized to determine how much material could be re-used on-site. Where fill placement would occur, these areas would initially be exposed to water erosion from the river, particularly during high flow and flood events. Still, the newly created features are expected to stabilize after grading efforts are completed, initial erosional events occur, and vegetation is re-established in disturbed areas. Sediment would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine process. The overall effects on river geomorphology would benefit aquatic resources and result in more natural alluvial processes that would increase the size, amount, and complexity of alluvial features that support diverse aquatic habitat, as discussed further in the EA/IS.

7.3.2 Substrate Quality

Project construction will directly amend the floodplain substrate as historically mined areas will receive fines and wood augmentation. In addition, enhanced post-project floodplain topography will encourage the deposition of fines in upslope areas and the development of vegetation. The resultant vegetation will provide cover for fish, future wood structures, and invertebrate production to the river and for the benefit of fishery resources.

7.3.3 Nutrient Cycling

The addition of large wood and other organic materials on all disturbed areas would increase nutrient cycling (addition of organic material) throughout the ESL. Placement of large wood and other organic material (chips, slash) and their subsequent decomposition will encourage nutrient recycling as aquatic invertebrates, saprotrophic fungi, and detritivores such as bacteria directly consume dead wood. In turn, these organisms will release nutrients by converting them into other forms of organic matter that may then be consumed by other organisms.

7.3.4 Condition of Aquatic Invertebrate, Amphibian, and Mollusk Habitat

The meander complex, lowered floodplains, slough, and wood structures all increase the complexity of habitat available to amphibian and aquatic invertebrate species, including mollusk beds.

7.3.5 Species Composition and Diversity

The Project is expected to result in an increase in species composition and diversity and in habitat complexity in the project reach. Activities included under the proposed action are intended to have beneficial effects on fisheries within the ESL, and these benefits are expected to increase over time. While protecting high-quality holding and spawning habitat, as illustrated in Figure 2-1, discussed above, and in greater detail in Appendix D, Project Description, in-channel activities would:

- Ensure that habitat availability continuously increases as discharge increases above baseflow.
- At a minimum, double rearing habitat capacity across the range of frequent discharges during the period when juvenile salmon are present in the river (350–4,000 cfs).
- Increase recruitment and production of spawning gravel (allochthonous) within the aquatic ecosystem.
- Enhance existing native amphibian habitat.
- Create seasonal surface water connection to off-channel habitats.

8. FISH SPECIES POPULATION CONDITIONS

8.1 Anadromous Salmonid Fish Species

Anadromous adult fish spawning success will be improved in several ways. Floodplains R-1, R2, and R-3 would be constructed to be inundated and function at flows ranging from about 600 to more than 7,000 cfs, and graded to ensure stranding does not occur. Activities associated with the construction of these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the surface area of the channel that could be inundated by reoccurring flows below the ordinary high-water mark (i.e., 6,000 cfs). Due to their low elevation and large width, the R-1, R-2, and R-3 floodplains are

expected to be depositional in some areas and experience scour in other areas. Deposition is expected to be the dominant geomorphic process in the upstream third of R-1, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-2 and R-3, whereas scour is unlikely in those areas due to their positions along the right valley margins. The low elevation of the valley grade surface will also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

The slough (IC-2) would also offer a refugia habitat under similar conditions. The meander channel (IC-1) would increase the amount of substrate suitable for spawning and rearing habitat, as well pools used for adult holding habitat. Placement of wood structures near spawning habitat would provide extensive cover from predators for adult anadromous fish during spawning activities. The sequestration of fine sediments around various wood structures is also expected to reduce the amount of fine sediment available for deposition within spawning areas.

8.2 Resident Fish Species

The construction of a meandering main channel and slough and reduction of floodplain elevations to increase timing and extent of inundation offer opportunities to increase the success of spawning and rearing of aquatic organisms, including fish and other aquatic organisms (e.g., mussel beds), The placement of structured log jams and other large wood features throughout the ESL are expected to benefit both anadromous and resident adult fish spawning, and juvenile fish rearing success in the project reach.

8.3 Species Traditionally Used By, and Culturally Important To, Native Americans

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 regarding 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 tribal cultures and economics.

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 Yurok and Hoopa Valley tribes' federally reserved fishing rights entitle them to take fish for ceremonial, subsistence, and commercial purposes.

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 Hoopa Valley and Yurok tribes, 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. Table 7.17-1 of the Master EIR/EA (Regional Water Board and Reclamation 2009) lists 10 aquatic resources (fish species) and 12 terrestrial resources (e.g., willows, cottonwoods, wild grape, bulrush) that are considered trust assets protected on behalf of the Tribes of the Klamath/Trinity Region. These species would generally benefit from restoring historic floodplain functions as this project is intended to do.

Implementation of the Oregon Gulch project would continue to support tribal trust assets. The short-term impacts described in sections of the EA/IS 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 the implementation of the overall TRRP.

9. TIME FRAME OVER WHICH EFFECTS ARE LIKELY TO OCCUR

The proposed Project is expected to begin achieving its objectives immediately following Project implementation and continue to provide benefits to the habitat within the project reach and downstream well into the future.

During Project implementation, insignificant amounts of turbidity are expected to occur in conjunction with in-channel and riverine activities due to excavation and placement of alluvial materials. These effects are expected to be ephemeral and would generally be confined to the area within and adjacent to the activity areas. Directly following implementation, the constructed meander complex and side channel would provide habitat for adult and juvenile salmonids and other aquatic organisms. The first large precipitation event following implementation is when stream flow and, therefore, flow patterns will be increased enough to inundate the expanded floodplain surfaces, providing refugia habitat for juvenile salmonids.

10. COMPARISON OF PROJECT ANALYSES TO MANAGEMENT GOALS

The BLM's Redding Field Office manages federal lands in the Trinity River Basin in accordance with its 1993 RMP and Record of Decision (RMP) (BLM 1993). The Trinity Management Area section of the RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan's jurisdiction, including BLM-managed lands at the Oregon Gulch rehabilitation site. As part of its decision-making process, BLM must evaluate the consistency of the modified proposed action with the RMP, as amended.

In addition to the BLM RMP, the Wild and Scenic River Implementation Guide of July 31, 1996, cites the following pertinent (paraphrased) goals, both of which are met by implementation of the project's activities:

- Protect the river's free-flowing character and protect or enhance its ORVs, and
- Maintain or improve water quality and quantity to meet fish habitat requirements.

11. SECTION 7 DRAFT DETERMINATION

The Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9–81.7) Project (Oregon Gulch project, project) is a habitat restoration project located on lands managed by the Bureau of Land Management (BLM). An Environmental Assessment / Initial Study (EA/IS) was prepared by two federal agency co-leads: the Bureau of Reclamation's Trinity River Restoration Program (TRRP) and the BLM. The California Regional Water Quality Control Board (North Coast Region) serves as state lead for the purposes of compliance with the California Environmental Quality Act. Included in the EA/IS is an analysis of the Oregon Gulch project consistency with the Wild and Scenic Rivers Act.

Based on the findings in the EA and Appendices, and taking into consideration the direction established by the Shasta-Trinity Land and Resource Management Plan and the BLM Resource Management Plan, we have determined that the Oregon Gulch project would have minimal short-term negative effects related to turbidity and immediate and long-term benefits to anadromous fish and their habitat. There will be no direct and adverse effects on free-flowing conditions, water quality, or the Outstandingly Remarkable Values of anadromous fisheries habitat.

The scale of the Oregon Gulch project is small when viewed at the watershed scale. It is an element of the TRRP's program to improve habitat for anadromous salmonids and other aquatic and riparian-dependent organisms within the 40-mile section of the Trinity River downstream of Lewiston Dam. Scenic values would not be degraded by the activities associated with the project; Section 3.4 provides additional information on visual resources and aesthetics. Additionally, the meander complex, lowered floodplains, side channel, and wood structures all increase the complexity of habitat available to riparian-dependent avian species.

Implementation of the Oregon Gulch project provides a net effect of protecting and enhancing river values by restoring natural characteristics of the river, including free-flowing conditions with improved floodplain accessibility and improving habitat quality for fish and other aquatic organisms. We have determined that there would be no direct and adverse effect on the river's free-flowing conditions, water quality, or Outstandingly Remarkable Values.

Appendix K – Summary of Cumulative Impacts

Trinity River Channel Rehabilitation Site: Oregon Gulch (River Mile 80.9–81.7)

This page intentionally left blank

Table K-1. Summary of Cumulative Impacts Considering Past, Present, and Reasonably Foreseeable Actions in the Trinity River Basin

Resource Area	Cumulative Impacts
Land Use	Implementation of the Proposed Action, combined 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.
Geomorphology and Soils	No significant cumulative impacts associated with geologic hazards, geomorphic processes, or erosional processes are anticipated to occur due to the implementation of the Proposed Action in combination with other related projects. While previous TRRP projects (e.g., Lorenz Gulch) and periodic increases in flow regimes continued to increase channel complexity throughout the 40-mile reach, large fires throughout the Trinity River basin continue to influence flow and sediment regimes within the watershed. Appropriate implementation of environmental commitments, project design features, and CEQA-specific mitigation measures would reduce potential impacts to a less-than-significant level.
Hydrology and Flooding	Implementation of the Proposed Action 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 or that would cause flooding.
Water Quality	No significant cumulative impacts to water quality are anticipated to occur as a result of the implementation of the Proposed Action in combination with other related projects and recent landscape-level changes as a result of recent fires in Trinity County. The TRRP implementation schedule acknowledges the need to stagger the implementation of channel rehabilitation projects along the 40-mile reach of the river to ensure that project sites have the opportunity to stabilize and revegetate. Individually, these activities would result in short-term, temporary effects on water quality. Appropriate implementation of environmental commitments, project design features, and CEQA-specific 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 Action. In conjunction with other projects and programs such as the Five Counties Salmonid Restoration effort, the effect of the Proposed Action is expected to be beneficial in terms of the rehabilitation of habitat and fisheries resources. Implementation of the Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect the Trinity River's fishery resources 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 the implementation of the Proposed Action in combination with other related projects. The Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect vegetation, wildlife, and wetlands in the long term, as would most of the other related projects and programs (e.g., Five Counties Salmonid Restoration). Implementation of the Proposed Action 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 the implementation of the Proposed Action in combination with other related projects. Benefits to recreational values may be achieved through the implementation of the TRRP over time.

Resource Area	Cumulative Impacts
Wild and Scenic Rivers	No significant adverse cumulative impacts to the outstandingly remarkable values (ORVs) of the Recreational section of the Trinity River designated by BLM as wild and scenic are anticipated to occur as a result of the implementation of the Proposed Action. In conjunction with other projects and programs such as the Five Counties Salmonid Restoration effort, the effects of the Proposed Action are expected to be beneficial to the ORVs that existed on the date of designation (e.g., fisheries resources). Implementation of the Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect the ORVSs in this section of the Trinity River protected under both the federal and state Wild and Scenic Rivers Acts in the long term.
Cultural Resources	No significant cumulative impacts to cultural resources are anticipated to occur as a result of the implementation of the Proposed Action. The environmental commitments, project design features, and implementation of prescribed CEQA-specific 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) consistent with the Programmatic Agreement between the Bureau of Reclamation and the California State Historic Preservation Officer would adequately address potential impacts, including cumulative impacts.
Air Quality	No significant cumulative impacts to air quality are anticipated to occur as a result of the implementation of the Proposed Action. North Coast Unified Air Quality Management District requirements would be addressed by implementing environmental commitments, project design features, and prescribed CEQA-specific mitigation measures. In conjunction with the other projects and programs occurring within the Trinity River Basin, the Proposed Action would contribute cumulatively to global climate change. Thus, the Proposed Action would contribute to an adverse cumulative contribution to global climate change. Implementation of the Proposed Action in conjunction with mitigation measures, would reduce the cumulative contribution to global climate change to a less-than-significant level.
Aesthetics	No significant cumulative impacts to visual resources are anticipated to occur as a result of the implementation of the Proposed Action. Implementation of the Proposed Action would benefit, rather than adversely affect, visual resources in the long term, as would most of the other related projects described in the cumulative effects analysis in the Master EIR.
Noise	No significant cumulative impacts related to noise are anticipated by implementing the Proposed Action in combination with other projects. Reclamation would coordinate the implementation of other restoration projects to ensure that construction noise is minimized through project scheduling.
Transportation/ Traffic Circulation	No significant cumulative impacts related to transportation/traffic circulation are anticipated by implementing the Proposed Action in combination with other related projects. Traffic increases would be localized and temporary.