Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites

Volume II: Draft Master Environmental Impact Report
Part 1: Draft Master Environmental Impact Report
Part 2: Environmental Assessment/Draft Environmental Impact Report

June 2009

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
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Federal Cooperating Agencies for NEPA
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Hoopa Valley Tribe
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Project Proponent's Consultant
North State Resources, Inc.

Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
5C Program	Five Counties Salmonid Conservation Program
ACHP	Advisory Council on Historic Preservation
ACS	Aquatic Conservation Strategy
ADT	average daily traffic
AEAM	Adaptive Environmental Assessment and Management
af	acre-feet
afa	acre feet annually
a.m.	morning
APE	Area of Potential Effect
Assistance Program	Trinity River Potable Water and Sewage Disposal System Assistance Program
BA	Biological Assessment
Basin Plan	Water Quality Control Plan for the North Coast Region, as amended June 28, 2001
BA/EFHA	Biological Assessment/Essential Fish Habitat Assessment
BEA	U.S. Bureau of Economic Analysis
BFE	base flood elevation
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	best management practice
C	staging area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
Cal Fire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CED	Center for Economic Development
CELSOC	Consulting Engineers and Land Surveyors of California
Census	U.S. Bureau of the Census
CEQ	President’s Council on Environmental Quality

CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CG	China Gulch
CHP	California Highway Patrol
CLOMR	conditional letter of map revision
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
Commission	California State Fish and Game Commission
County	Trinity County
CNDDB	California Natural Diversity Database
CR	Chapman Ranch
CRA	California Resources Agency
CRHR	California Register of Historic Resources
CTR	California Toxics Rule
CUPA	Certified Unified Program Agency
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
d_{50}	mean diameter of channel bed material
dB	logarithmic decibel
dBA	"A-weighted" decibel scale
DC	Douglas City
DCCVFD	Douglas City Community Volunteer Fire Department
DCK	Dutch Creek
DEIS	Draft Environmental Impact Statement
DG	Deep Gulch
DOI	U.S. Department of the Interior
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EA/DEIR	Environmental Assessment/Draft Environmental Impact Report
EB	Evan's Bar
EDD	California Employment Development Department
EFH	essential fish habitat
EFHA	Essential Fish Habitat Assessment
e.g.	for example
EIR	Environmental Impact Report
EIS	Environmental Impact Statement

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
et al.	and others
et seq.	and the following ones
FACW	facultative wetland species
FDA	Food and Drug Administration
FEIS/EIR	Final Environmental Impact Statement/Environmental Impact Report
FEMA	Federal Emergency Management Agency
FH	Flood Hazard
FHO	Flood Hazard Overlay
FIRM	Flood Insurance Rate Maps
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impacts
fps	feet per second
FR	Federal Register
FY	fiscal year
GHG	greenhouse gas
GIS	geographic information system
H_2S	hydrogen sulfide
HEC-RAS	Hydraulic Engineering Center River Analysis System
Hg	mercury
HPTP	Historic Property Treatment Plan
HVT	Hoopa Valley Tribe
IAP	Integrated Assessment Plan
IC	in-channel activity area
i.e.	that is
ISMS	Interagency Species Management System
JCVFD	Junction City Volunteer Fire Department
KFMC	Klamath Fishery Management Council
kg	kilogram
KMP	Klamath Mountains Province
KOP	key observation point
KRTAT	Klamath River Technical Advisory Team
L	liter
L_{dn}	day-night average sound level

L_{eq}	equivalent noise levels
LCSD	Lewiston Community Services District
LJC	Lower Junction City
LKG	Limekiln Gulch
LOMP	letter of map revision
LR	Lowden Ranch
LRC	Lower Rush Creek
LRMP	Land and Resource Management Plan
LSF	Lower Steiner Flat
LWD	large woody debris
LZG	Lorenz Gulch
M	existing roads and access routes
maf	million acre-feet
MBP	Middle Poker Bar
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake
MCL	maximum contaminant level
MDBM	Mount Diablo Base and Meridian
MEIR	Master Environmental Impact Report
MFF	maximum fishery flows
mg	milligram
MG	McIntyre Gulch
ml	milliliters
mm	millimeters
MMRP	Mitigation Monitoring and Reporting Program
MOU	memorandum of understanding
mph	miles per hour
MSA	Magnuson-Stevens Fishery Conservation and Management Act
msl	mean sea level
N	new roads and access routes
NAAQS	National Ambient Air Quality Standards
NAD	North American Datum
NAHC	Native American Heritage Commission
NCAB	North Coast Air Basin
NCUAQMD	North Coast Unified Air Quality Management District
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NFMA	National Forest Management Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_X	nitrogen oxide gases
NO_2	nitrogen dioxide
NOD	Notice of Determination
NOP	Notice of Preparation

NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	North State Resources, Inc.
NTU	nephelometric turbidity unit
O_3	ozone
OBL	obligate
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OG	Oregon Gulch
OHP	Office of Historic Preservation
OHW	ordinary high water mark
OPR	Governor's Office of Planning and Research
ORVs	Outstandingly Remarkable Values
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
Pb	lead
PB	Poker Bar
PFMC	Pacific Fishery Management Council
pga	peak ground acceleration
PL	Public Law
p.m.	night
$PM_{2\,5}$	fine particulate matter (particulate matter less than 2.5 microns in aerodynamic diameter)
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PRC	Public Resources Code
PUD	Public Utility District
Q	flow rate (typically expressed in cfs)
Q_{50}	50-year flood flow
Q_{100}	base or 100-year flood flow
Q_{max}	maximum unobstructed flow
Q_{MCR}	maximum controlled-flow release
Q_{1997}	estimated flow during 1/1/97
R	riverine activity area
RC	Reading Creek
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Bureau of Reclamation
REIS	Regional Economic Information System

Regional Water Board	North Coast Regional Water Quality Control Board
RM	River Mile
RMP	Resource Management Plan
RNA	research natural area
ROD	Record of Decision
ROW	right-of-way
RPM	reasonable and prudent measures
RVD	Recreational Visitor Day
S&Gs	standards and guidelines
SB	Steel Bridge Road Day Use
SCH	State Clearinghouse
SCK	Soldier's Creek
SEIS	Supplemental Environmental Impact Statement
SFC	Stein Flat Campground
SFF	Steiner Flat Feather Edge
SHC	Sheridan Creek
SHPO	California State Historic Preservation Officer
SIA	special interest area
SLC	California State Lands Commission
SO_2	sulfur dioxide
SM	Sawmill
SMARA	Surface Mining and Reclamation Act
SONCC	Southern Oregon/Northern California Coasts
SR	State Route
SRA	shaded riverine aquatic
STAR	Southern Trinity Area Rescue
State Water Board	State Water Resources Control Board
STNF	Shasta-Trinity National Forest
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCEHD	Trinity County Environmental Health Department
TCLP	Toxicity Characteristic Leaching Procedure
TCRCD	Trinity County Resource Conservation District
TCSD	Trinity County Sheriff's Department
TCWMC	Trinity County Weed Management Cooperative
THG	Trinity House Gulch
TLG	Tom Lang Gulch
TMC	Trinity Management Council
TMDL	Total Maximum Daily Load
TRD	Trinity River Diversion
TRFE	Trinity River Flow Evaluation
TRFES	Trinity River Flow Evaluation Study
TRRP	Trinity River Restoration Program
TRSSH	Trinity River Salmon and Steelhead Hatchery
U	upland activity area

UCC	Upper Conner Creek
UFC	Upper Junction City
URC	Upper Rush Creek
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAU	visual assessment unit
VFD	volunteer fire department
VQO	visual quality objectives
VRM	Visual Resource Management
WAPA	Western Area Power Authority
WCSD	Weaverville Community Services District
WDR	Waste Discharge Requirements
WGH	Wheel Gulch
WMA	Weed Management Area
WSE	water-surface elevation
WSRA	Wild and Scenic Rivers Act
X	temporary crossing
YT	Yurok Tribe

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CHAPTER 1

Introduction and Background

Chapter 1
Introduction and Background

1.1 Overview

The U.S. Bureau of Reclamation (Reclamation) proposes to conduct mechanical channel rehabilitation and sediment management activities on the mainstem Trinity River below Lewiston Dam as part of the Trinity River Restoration Program (TRRP), an ongoing program to help restore the anadromous fishery of the Trinity River. The proposed river channel rehabilitation activities would recreate complex fish habitat and provide conditions suitable for reestablishing and sustaining native riparian vegetation. These proposed channel rehabilitation activities would occur at 23 locations called the "Phase 2" sites, plus the remaining phase 1 locations referred to as the "Remaining Phase 1" sites in this document. For the Remaining Phase 1 sites, sediment management activities and mechanical channel rehabilitation plans are sufficiently developed to allow detailed analysis. Activities at these sites are scheduled for implementation in the next 2 years. Activities at the Phase 2 sites are anticipated to occur at a later stage of the ongoing program.

Sediment management activities will include the introduction of coarse sediment (e.g., spawning gravel) to the river at strategic locations as well as activities to reduce the introduction of fine sediment to the river. In addition to the introduction of coarse sediment to the river in conjunction with mechanical channel rehabilitation sites, coarse sediment activities would occur at as many as five discrete locations on the Trinity River between Lewiston Dam and Indian Creek. Primarily, activities associated with coarse sediment management include gravel processing and transport and introduction of gravel to the Trinity River. Fine sediment management activities focus on those actions required to maintain the sediment retention basins known as the Hamilton Ponds located near the mouth of Grass Valley Creek. These activities focus on the removal of sand that has settled out in the Hamilton Ponds and transporting it to a stable location away from the Trinity River.

This document is divided into two parts. Part 1 is the Draft Master Environmental Impact Report (Draft Master EIR). This part of the document evaluates the environmental impacts of the proposed rehabilitation and sediment management activities at the Remaining Phase 1 and Phase 2 sites. From a programmatic perspective, it provides a discussion of the existing conditions, environmental impacts, and mitigation measures required to comply with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.). In addition to addressing direct and indirect impacts associated with the Proposed Project and the alternatives, the Draft Master EIR addresses cumulative and growth-inducing impacts that could be associated with activities at the Remaining Phase 1 and Phase 2 sites.

Part 2 is an Environmental Assessment/Draft Environmental Impact Report (EA/Draft EIR); an integrated NEPA/CEQA document that evaluates the environmental impacts of the proposed channel rehabilitation and sediment management activities at a project-specific level for the Remaining Phase 1 sites. The EA/Draft EIR has been prepared to comply with the National Environmental Policy Act (NEPA) (42 United States Code [USC], Section 4321 et seq.) and the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.).

Reclamation is serving as the federal lead agency under NEPA, and the North Coast Regional Water Quality Control Board (Regional Water Board) is serving as the state lead agency under CEQA. Reclamation is responsible for the funding and implementation of the rehabilitation and sediment management activities. As managers of public lands within the watershed and along the mainstem Trinity River, the Shasta-Trinity National Forest (STNF) and the Bureau of Land Management (BLM) are serving as NEPA cooperating agencies. Based on their past and on-going involvement in the TRRP and the Trinity Management Council (TMC), and their jurisdiction over tribal trust resources (e.g., fish, wildlife) the Hoopa Valley Tribe (HVT) and Yurok Tribe (YT) also serve as cooperating agencies. From a CEQA perspective, the Trinity County Resource Conservation District (TCRCD), in its role as a potential TRRP funding agency serves as a cooperating agency, while responsible agencies include the California Department of Transportation (Caltrans), the California Department of Fish and Game (CDFG), California Department of Water Resources (DWR) and Trinity County.

This combined NEPA/CEQA document evaluates the environmental impacts of the proposed channel rehabilitation and sediment management activities at both programmatic and project-specific level. Part 1 addresses the effects of all proposed activities at a programmatic level with a focus on the potential environmental effects that may occur at all rehabilitation sites and the cumulative effects of implementing all proposed activities. Part 2 evaluates the environmental consequences of the proposed channel rehabilitation and sediment management activities at the Remaining Phase 1 sites at a project-specific level.

The Master EIR also meets the elements required for a Program EIR pursuant to California Code of Regulations, title 14, section 15168. A Master EIR and Program EIR serve similar functions in providing programmatic level review from which site-specific projects may tier. For subsequent site-specific projects proposed more than five years from certification of the Master EIR, the lead agency may rely on this document as a Program EIR, or in the alternative, make the findings under California Code of Regulations, title 14, section 15179.

1.2 Regional Setting

The Trinity River originates in the rugged Salmon-Trinity Mountains of northern California in the northeast corner of Trinity County. The Trinity River basin encompasses the majority of Trinity County and the easternmost portion of Humboldt County (see Figure 1-1). The mainstem Trinity River flows a total of 170 miles from its headwaters to its confluence with the Klamath River at Weitchpec, on the Yurok Indian Reservation. The Trinity River passes through Trinity County, Humboldt County, the Hoopa Valley Indian Reservation, and the Yurok Indian Reservation. Much of the basin is composed of

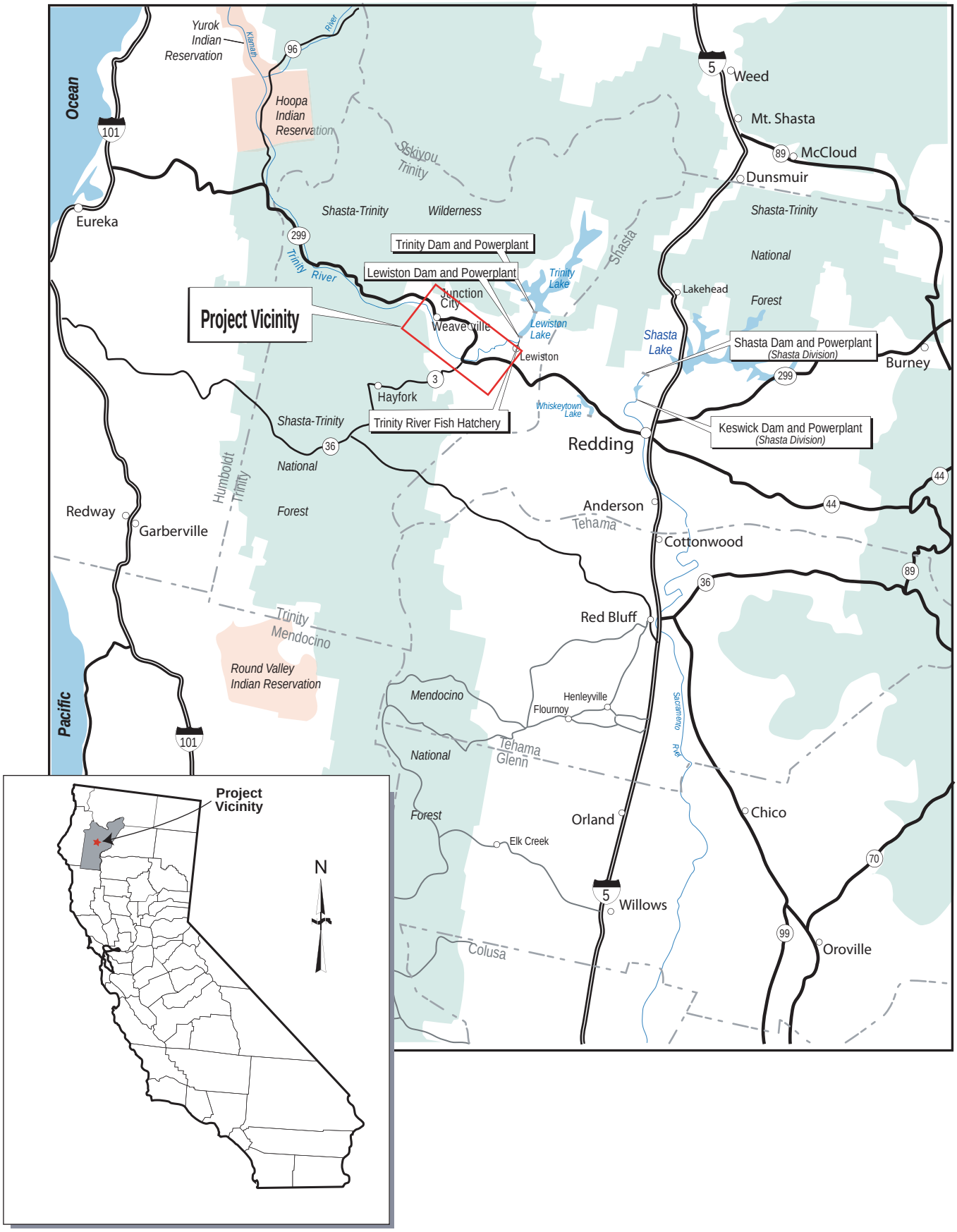

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Figure 1-1
Project Vicinity

federal lands managed by the USDA Forest Service, BLM, and, to a lesser extent, Reclamation. Ownership along the Trinity River corridor is a mixture of public, Tribal, and private lands.

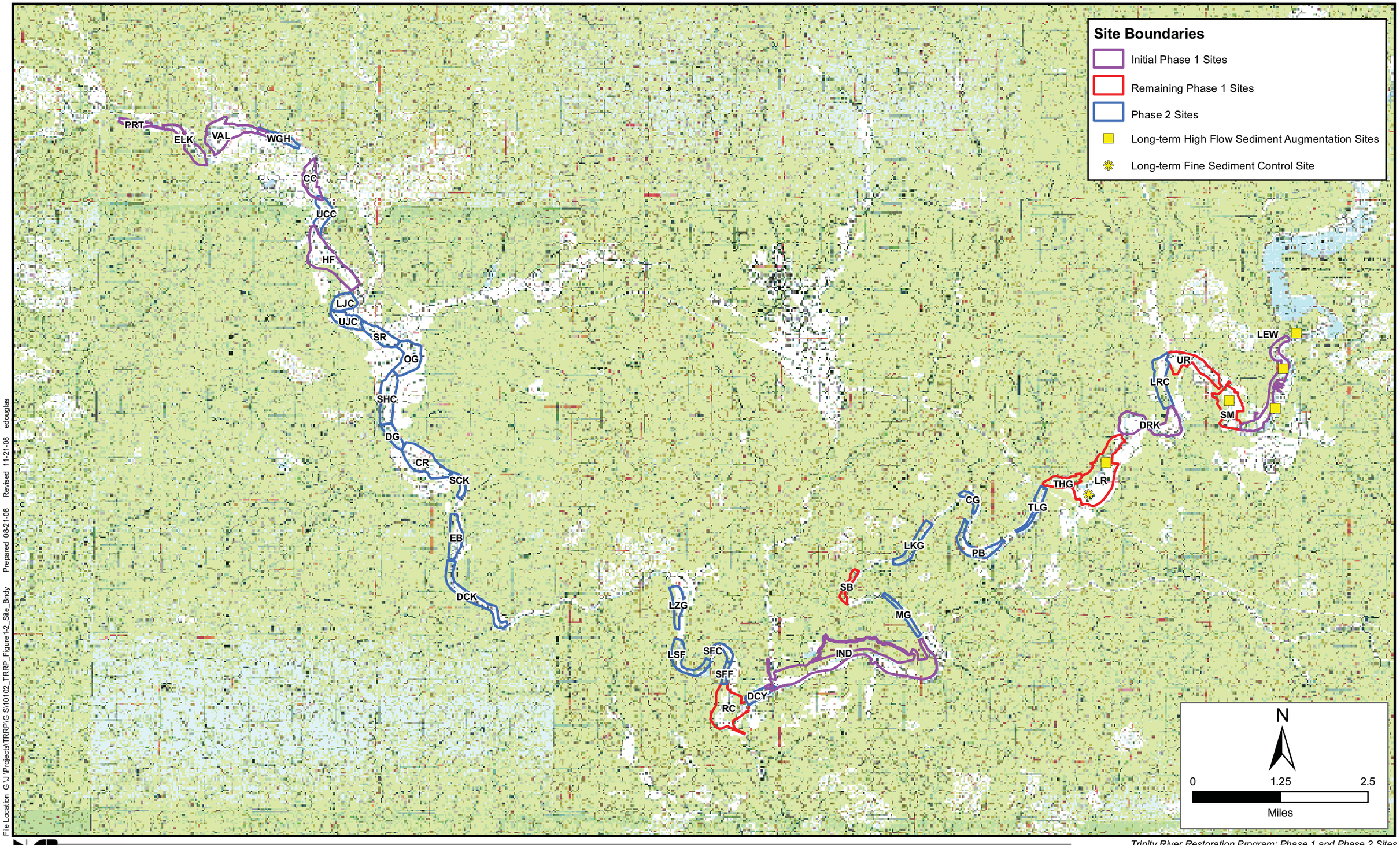
The Trinity River flows generally southward until impounded by Trinity Dam and Lewiston Dam. The river drains a watershed of approximately 2,965 square miles; about one-quarter of this area is above Lewiston Dam. From Lewiston Dam, the river flows westward for 112 miles until it enters the Klamath River near the town of Weitchpec, 43.5 miles upstream from the Pacific Ocean. The Klamath River flows northwesterly for approximately 40 miles from its confluence with the Trinity River before entering the Pacific Ocean.

The topography of the Trinity River basin is predominantly mountainous, and the basin is heavily forested. Elevations in the watershed range from 8,888 feet above mean sea level (msl) at Sawtooth Mountain in the Trinity Alps to 300 feet above msl at the confluence of the Trinity and Klamath rivers. Land use within the Trinity River basin is greatly influenced by the large amount of public, Tribal, and private forestlands, much of which is used for timber production and other natural resource-related uses. Two scenic byways, State Route 299 (SR 299) and State Route (SR 3), cross the county. State Route 299 is the primary travel corridor through Trinity County, connecting the Central Valley with the coastal communities of Humboldt County. The area's numerous lakes and rivers provide many recreational opportunities, including fishing and boating. Private uses along the Trinity River are generally limited to scattered residential and commercial development.

1.3 Project Location

The general setting for the Proposed Project is the mainstem Trinity River below Lewiston Dam. Collectively, the Proposed Project encompasses 29 rehabilitation site locations along the 40-mile reach of the mainstem Trinity River from Lewiston Dam to the North Fork Trinity River. As shown on Figure 1-2, the Remaining Phase 1 sites (6 locations) are concentrated between Lewiston and Douglas City (about a 16-mile reach) and the Phase 2 sites (23 locations) are located from about Rush Creek (River Mile 107) to Wheel Gulch (River Mile 75). The boundaries established for the Remaining Phase 1 sites are based on detailed site evaluations and are definitive, while the Phase 2 site boundaries are conceptual and subject to change as the planning process progresses. Figure 1-2 also illustrates the location of mechanical channel rehabilitation projects completed by the TRRP in addition to several long-term sediment management sites.

TRRP staff, with interdisciplinary review from TMC technical staff, developed the site boundaries to incorporate the wide range of rehabilitation activities that were considered. These activities include removal of encroaching riparian vegetation, rehabilitation of floodplain and in-channel alluvial features, construction of off-channel habitat for aquatic- and riparian-dependent species, sediment management, and rehabilitation of upland habitat.



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North State Resources, Inc.

Trinity River Restoration Program: Phase 1 and Phase 2 Sites

Figure 1-2
TRRP Project Sites

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1.4 Project History and Background

1.4.1 Trinity and Lewiston Dams

Completion of Trinity Dam and Lewiston Dam in 1964 blocked anadromous fish access to habitat upstream of Lewiston Dam, restricting these fish to habitat below Lewiston Dam. The location of the Trinity River relative to other components of the Central Valley Project (CVP) is shown on Figure 1-1. The dams also eliminated sediment supply from more than 700 square miles of the upper watershed. Trans-basin diversions from Lewiston Lake to the Sacramento River basin altered the hydrologic regime of the Trinity River, diminishing annual flows by up to 90 percent. Consequences of diminished flows included encroachment of riparian vegetation, establishment of riparian berms, and fossilization of point bars at various locations along the river, as far downstream as the North Fork Trinity River. These geomorphic changes reduced the diversity of riparian age classes and riparian vegetation species, impaired floodplain access, and adversely affected fish habitat.

In 1981, in response to declines in salmon and steelhead populations, the Secretary of the Interior directed the U.S. Fish and Wildlife Service (USFWS) to initiate a 12-year flow study to determine the effectiveness of flow restoration and other mitigation measures for impacts of the Trinity River Division (TRD) of the CVP. Then, in 1984, Congress enacted the Trinity River Fish and Wildlife Program to further promote and support management and fishery restoration actions in the Trinity River basin. Under this program, nine pilot bank rehabilitation projects between Lewiston Dam and the North Fork Trinity River were implemented between 1991 and 1993, among other actions.

1.4.2 Central Valley Project Improvement Act

In 1992, Congress enacted the Central Valley Project Improvement Act (CVPIA). One purpose of the CVPIA (Section 3406) was to protect, restore, and enhance fish, wildlife, and associated habitats in the Trinity River basin. The act also directed the Secretary of the Interior to finish the 12-year Trinity River Flow Evaluation Study (TRFES) and to develop recommendations "regarding permanent instream fishery flow requirements, TRD operating criteria, and procedures for the restoration and maintenance of the Trinity River fishery." The Trinity River Flow Evaluation Final Report was ultimately published in 1999 by the USFWS and the HVT, providing a framework for restoration activities below Lewiston Dam as well as the basis for the preferred alternative in the concurrent programmatic environmental analysis.

1.4.3 Trinity River Mainstem Fishery Restoration

In 1994, the USFWS as the NEPA lead agency and Trinity County as the CEQA lead agency began the public process for developing the Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The ROD for the Final EIS/EIR (FEIS/EIR) (December 19, 2000) directed Department of the Interior (DOI) agencies to implement the Flow Evaluation Alternative, which was identified as the Preferred Alternative in the FEIS/EIR. In addition to the Flow Evaluation Alternative, elements of the Mechanical Restoration Alternative were included in the decision (U.S. Department of Interior 2000). The ROD set forth prescribed Trinity River flows for five

water-year types: extremely wet (815,200 acre-feet annually [afa]), wet (701,000 afa), normal (646,900 afa), dry (452,600 afa), and critically dry (368,600 afa). After the ROD was issued, the decision was challenged in federal court; ultimately, the ROD was upheld by the United States Court of Appeals for the Ninth Circuit. Based on this outcome, the flows prescribed by the 2000 ROD are deemed to constitute the "existing [hydrological] environment" for CEQA purposes, and are considered the basis for the environmental analysis under both NEPA and CEQA.

While the ROD identified a number of components that were included in the TRRP, this document focuses on the mechanical channel rehabilitation and fine and coarse sediment management components that would be implemented over time and at various locations along the river. The ROD acknowledged the benefit of implementing mechanical channel rehabilitation activities in two phases. To date, rehabilitation activities have been fully or partially implemented at four Phase 1 Rehabilitation Projects. In addition to the 13 mechanical channel sites identified in the ROD where construction has been done (e.g., Hocker Flat, Valdor Gulch), side channel and coarse sediment augmentation efforts have been implemented at various locations (i.e., Indian Creek and Dark Gulch side channel sites and the Lewiston Hatchery coarse sediment augmentation site). During the development of the Canyon Creek Suite project, an additional non-ROD site (Pear Tree) was added based on post-ROD evaluations. Phase 1 will be complete once the proposed activities at the Remaining Phase 1 sites evaluated in this document have been completed. Phase 2 as defined in this document includes mechanical channel rehabilitation at 23 locations (24 ROD sites). Coarse sediment management may occur at some of these sites in conjunction with other rehabilitation activities. Fine sediment management will continue to occur on a periodic basis at the Hamilton Ponds. The Phase 2 sites are interspersed with the Phase 1 sites along the 40-mile reach of the mainstem Trinity River downstream of Lewiston Dam.

To ensure the efficient use of resources, the TRRP has also incorporated sediment management activities (coarse and fine) at locations within, or adjacent to several Phase 1 sites. Fine sediment management control activities are ongoing at the confluence of Grass Valley Creek in conjunction with the maintenance of the Hamilton Ponds. Coarse sediment management activities have been implemented at the Indian Creek project (processing of gravel/dredger tailings for river placement) and coarse sediment augmentation has been implemented at various locations associated with TRRP's Lewiston-Dark Gulch project (which included work at Lewiston and Dark Gulch site locations). The TRRP proposes to expand the coarse sediment management activities at the Remaining Phase 1 and Phase 2 sites evaluated in this document.

1.4.4 Trinity River Basin Chronology

The following is a brief chronology summarizing the most pertinent legislation, authorities, and management actions that have occurred relevant to the Trinity River basin.

- 1938 – Construction of the CVP was authorized by the Rivers and Harbors Act
- 1955 – Congress authorized the construction and operation of the TRD.
- 1964 – The TRD was completed and fully operational.
- 1976 – The Pacific Fishery Management Council (PFMC) was established.

- 1981 – The Secretary of the Interior made the decision to temporarily increase Trinity River instream flows and the USFWS is ordered to initiate 12-year Trinity River Flow Evaluation Study.
- 1983 – The USFWS prepared an EIS in support of Trinity River Restoration efforts.
- 1984 – The Trinity River Basin Fish and Wildlife Management Act was passed by Congress.
- 1991 – The Secretary of Interior made the decision to temporarily increase Trinity River flows to 340,000 af until the TRFE was completed (Lujan Decision).
- 1992 – Congress passed the Central Valley Project Improvement Act (PL 102-575).
- 1994 – The USFWS, HVT and Trinity County initiated an EIS/EIR for the Trinity River Mainstem Fishery Restoration program.
- 1996 – Congress reauthorized and amended the Trinity River Basin Fish and Wildlife Management Act (PL 104-43).
- 2000 – The Secretary of Interior signed the Record of Decision for Trinity River Mainstem Fishery Restoration FEIS
- 2001 – The ROD is challenged in United States District Court for the Eastern District of California, resulting in issuance of preliminary injunction urging Department of the Interior to undertake preparation of Supplemental EIS (SEIS), although non-flow aspects of the ROD are allowed to proceed.
- 2002 – Reclamation's TRRP office is established in Weaverville.
- 2004 – U.S. Court of Appeals for the Ninth Circuit entered opinion reversing District Court with regard to preparation of an SEIS. Immediate implementation of all aspects of the 2000 ROD is mandated. Subsequently, all parties to the litigation acknowledged the court's opinion.
- 2005 – The TRRP completed the Trinity River Bridges Project.
- 2006 – The TRRP completed several infrastructure improvement projects, including the relocation of little yellow house and realignment of roads in the Poker Bar subdivision.
- 2005 – The TRRP completed the Hocker Flat Project.
- 2006 – The TRRP completed the Canyon Creek Project.
- 2007 – The TRRP completed the Indian Creek Project.
- 2008 – The TRRP completed the Lewiston-Dark Gulch Project.

Additional details concerning the legislative and management history can be found in the Trinity River Mainstem Fishery Restoration FEIS/EIR (U.S. Fish and Wildlife Service et al. 1999) and the EA/Final EIRs for the referenced TRRP projects. These documents are on file at the TRRP office in Weaverville, California.

1.4.5 Restoration Programs in the Trinity River Basin

A variety of restoration activities has been undertaken by the TRRP during the past 7 years, as summarized below, and additional information is available on the TRRP program website[1]. This section also provides a brief discussion of other watershed restoration programs and activities occurring within the basin.

Trinity River Restoration Program

The fundamental purpose of the TRRP is to restore (non-hatchery) anadromous fish populations of the Trinity River to levels existing just prior to construction of the TRD of the CVP. The 2000 ROD for the Trinity River Mainstem Fishery Restoration FEIS/EIR outlined six specific and integral components of the TRRP:

- implementation of a variable annual flow regime according to recommendations provided in the TRFES,
- mechanical channel rehabilitation,
- fine and coarse sediment management,
- watershed restoration,
- infrastructure improvement, and
- adaptive environmental assessment and management.

The objective of the TRRP is to create a dynamic alluvial channel that exhibits the characteristics of the pre-dam river but at a smaller scale. This approach is intended to implement Trinity River restoration goals while ensuring that the water storage/delivery, power production, and flood control objectives of the TRD are maintained.

The TRRP acts under guidance of the Trinity Management Council (TMC), which provides overall program direction in order to restore, enhance, and conserve the natural production of anadromous fisheries, native plant communities, and associated wildlife resources of the Trinity River basin in sufficient quantity and quality to ensure long-term sustainability. TMC member agencies include Reclamation, USFWS, National Marine Fisheries Service (NMFS), U.S. Forest Service (USFS), HVT, YT, the California Natural Resources Agency (represented by the California Department of Fish and Game (CDFG) and the California Department of Water Resources (DWR)), and Trinity County. Technical experts from each of these agencies and their consultants participated in the design and review of the rehabilitation sites, including site-specific designs for the Remaining Phase 1 sites.

An integral part of the TRRP is the implementation of an Adaptive Environmental Assessment and Management (AEAM) Program. As described in the FEIS, an AEAM process is important for management of complex physical and biological systems like the Trinity River. The TRRP office has been located in Weaverville, California, to ensure that all components of the program are efficiently implemented and coordinated with the numerous agencies, Tribes, and stakeholders involved. Specific

[1] http://www.trrp.net/RestorationProgram/index.htm

activities of the TRRP include project development, implementation, and monitoring activities throughout the Trinity River basin.

The AEAM Program is a formal, systematic, and rigorous program of learning from the outcomes of management actions, accommodating changes, and rapidly improving management actions. The proposed rehabilitation activities addressed in this document have been developed in a manner compatible with the AEAM Program elements. These elements include the following:

- define measurable goals and objectives;
- develop testable hypotheses of how to achieve the goals and objectives through management actions;
- predict river response to management actions before implementing these actions;
- reevaluate objectives, refine hypotheses, improve models, and improve management; and
- continually self-examine AEAM science and management via external peer review.

TRRP Channel Rehabilitation Activities

The ROD for the Trinity River Mainstem Fishery FEIS/EIR specified that mechanical channel rehabilitation activities would be implemented on the mainstem Trinity River between Lewiston Dam and the North Fork Trinity River. Conceptually, the overall intent of these activities was to selectively remove fossilized berms (berms that have been anchored by extensive woody vegetation root systems and consolidated sand deposits); revegetate and provide conditions for regrowth/sustenance of native riparian vegetation; and reestablish alternate point bars and complex fish habitat similar in form to those that existed prior to the construction of the TRD. The ROD also acknowledged that the TRD eliminated supplies of coarse sediment from upstream sources and the resultant need to ensure that the sediment flux of the mainstem Trinity River is managed to complement the flow and mechanical channel rehabilitation components. Sediment management actions were anticipated, including the introduction of coarse sediment at selected locations, as well as reducing the fine sediment fraction that is introduced into the mainstem Trinity River from Grass Valley Creek.

The Trinity River Mainstem Fishery Restoration FEIS/EIR identified 44 potential channel rehabilitation sites and 3 potential side-channel sites for consideration by the TRRP. Site selection was based on identifying locations where the maximum amount of habitat for native anadromous fishes could be initiated through construction projects, and then enhanced or maintained by a combination of river flows plus coarse sediment augmentation. Consequently, the original sites were chosen based largely on the existence of riparian berms and where channel morphology, sediment supply, and high-flow hydraulics would encourage a dynamic alluvial channel.

Each original site was labeled using a numeric system. Subsequently, a systematic and detailed evaluation of the Trinity River identified 104 specific rehabilitation sites that offered rehabilitation opportunities. These sites were labeled using an alpha descriptor. For planning purposes, each TRRP channel rehabilitation/side channel site has been associated with a rehabilitation project name. Table 1-1 lists the initial Phase 1 projects, site locations, and their corresponding numeric and alpha site identifiers

for the sites that have been completed or are currently under construction. Activities at the Hocker Flat, Canyon Creek Suite, Indian Creek, Lewiston, and Dark Gulch site locations have been implemented.

Table 1-1. Initial Phase 1 Sites (Name-Number-Label)

Rehab Project	Site Location	ROD Site umber	TRRP Site Label
Hocker Flat	Hocker Flat (HF)	39	CK, CL, CM
Canyon Creek Suite	Conner Ck (CC), Valdor Gulch (VAL), Elkhorn (ELK), & Pear Tree (PRT)	0[2], 41, 43, 44	CN, CO, CP, CS, CT-R, CT-L, CU-R, CU-L, CV, CW, CX
Indian Creek	Indian Ck (IC)	19, 20, SC3[3]	AU, AV, AW, AX, AY, AZ, BA, BBl
Lewiston-Dark Gulch	Lewiston (LEW), Dark Gulch (DRK)	1, 2, 3, 4 7, 8, 9, SC1	ZZ, A, B, C, D E, N, O, P, Q, R

Table 1-2 lists the Remaining Phase 1 site names and their corresponding numeric and alpha site identifiers.

Table 1-2. Remaining Phase 1 Sites (Name-Number-Label)

Site Location	ROD Site Number	TRRP Site Label
Sawmill (SM)	5	F, H, I-L, I-R, J
Upper Rush Creek (URC)	6a[4]	K
Lowden Ranch (LR)	10	T-R, T_L, S
Trinity House Gulch (THG)	11, SC2	U-sc, V-2R
Steel Bridge Day Use (SB)	17	AP, AQ-IL, AQ-2L
Reading Creek (RC)	21, 22	BH, BG, BF-1R, BF-2R, BE-2R, BE-1L, Bd, 2L

Table 1-3 shows Phase 2 site names and their corresponding numeric and alpha site identifiers.

Table 1-3. Phase 2 Sites (Name-Number-Label)

Original Site Location	Updated Site Location	ROD Site Number	TRRP Site Label
Lower Rush Creek (LRC)	no change	6b	M, L-L, L-R
Upper Poker Bar (UPB)	Tom Lang Gulch (TLG)	12	Y, X, W-1R, W-2R, V-1R
Middle Poker Bar (MBP)	Poker Bar (PB)	13	AD, AC, AB, AA, Z
Lower Poker Bar (LPB)	China Gulch (CG)	14	Af, AE
Upper Steel Bridge (USB)	Limekiln Gulch (LKG)	16[5]	AJ-2R, AJ-1R, AI, AL, AK
McIntyre Gulch (MG)	no change	18	AS-1L, AS-1R, AS-2L, AR
Douglas City (DCY)	no change	N/A	BC-1L, BC-1R, BC-2R, BC-2L

[2] The Pear tree site (PRT), site 0, was implemented as a Canyon Creek Suite site location, but was not identified in the ROD.
[3] SC = Side channel
[4] Original ROD site 6 was expanded to two sites: Upper Rush Creek = 6a and Lower Rush Creek = 6b.
[5] Original ROD site 15 has been merged within other sites.

Table 1-3. Phase 2 Sites (Name-Number-Label)

Original Site Location	Updated Site Location	ROD Site Number	TRRP Site Label
Steiner Flat No. 1 (SF1)	Steiner Flat Feather Edge (SFF)	N/A	N/A
Steiner Flat No. 2 (SF2)	Steiner Flat Campground (SFC)	23	BJ, BI
Steiner Flat No. 3 (SF3)	Lower Steiner Flat (LSF)	24, 25	BN-2L, BN-1R, BM, BL, BK-1R, BK-2R
Steiner Flat No. 4 (SF4)	Lorenz Gulch (LZG)	26	BP-1L, BP-2L, BO-1L, BO-2L, BO-1R
Dutch Creek (DCK)	no change	27	BU-L, BV-sc, BX-R, BX-L, BW, BV, BU
Evan's Bar (EB)	no change	28	BX-Lsc, BX-R
Soldier Creek (SCK)	no change	29	BZ, BY-L, BY-R
Upper Chapman Ranch (UCR)	Chapman Ranch (CR)	30	CB-2R, CB-1R, CB-1L, CB-2L, CA-R, CA-L
Lower Chapman Ranch (LCR)	Deep Gulch (DG)	31	CD, CC
Sheridan Creek (SHC)	no change	32	CE
Oregon Gulch (OG)	no change	33	CF
Sky Ranch (SR)	no change	34, 35	CH, CG-1R, CG-2R
Upper Junction City (UJC)	no change	36, 37	CJ, CI
Lower Junction City (LJC)	no change	38	CJ
Upper Conner Creek (UCC)	no change	40	CN, CM
Wheel Gulch (WGH)	no change	42	CR-r, CR-L

Figure 1-2 shows the locations of the Remaining Phase 1 project sites and the Phase 2 project sites.

Other Trinity River Basin Watershed Restoration Efforts

In conjunction with the TRRP projects, numerous other watershed restoration projects are being planned and implemented throughout the Trinity River basin. Beginning in the late 1980s, the HVT Tribe conducted watershed assessments on each of the major tributary watersheds within the Reservation. These assessments identified a number of watershed restoration projects that have been implemented by the HVT. Projects, including road stabilization and decommissioning and stream restoration efforts have been implanted in the Mill Creek, Supply Creek, and Tish Tang Creek watersheds over the past 20 years.

The YT and the Trinity County Resource Conservation District (TCRCD) are implementing projects along the Lower Klamath River and South Fork Trinity River, respectively, with funding provided by the CDFG's Coastal Salmon Recovery Program. BLM; STNF; the State Water Resources Control Board (State Water Board); the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS); and the National Fish and Wildlife Foundation are also funding and/or implementing numerous upslope watershed restoration projects throughout the basin, including the South Fork Trinity River watershed.

Working through the Five Counties Salmonid Conservation Program (5C Program) and using grant funding provided by CDFG and the State Water Board, Trinity County has inventoried all county road crossings of fish-bearing streams in the Trinity River basin and is currently implementing the highest ranked fish migration removal projects. The 5C Program has also completed a sediment source inventory on county roads and is prioritizing and implementing projects to reduce road-related sediment sources. Similarly, BLM has recently completed a comprehensive sediment source inventory of its roads in the Trinity River watershed. As opportunities are available, this inventory will provide the basis for developing sediment source reduction projects on lands managed by BLM throughout the watershed.

1.5 Purpose of This Document

As stated previously, this document addresses both CEQA and NEPA requirements. Both statutes generally 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. By preparing a single document in two parts, the involved agencies improve intergovernmental coordination and avoid unnecessary duplication of effort.

Under CEQA, a Master EIR may be prepared for a series of related actions that are characterized as one large project or program, such as the channel rehabilitation and sediment management activities proposed by the TRRP. A Master EIR forms the basis for analyzing the effects of subsequent projects (CEQA Guidelines Section 15175, et. seq.), a process known as "tiering." The project-level analysis in the EA/Draft EIR of the activities proposed at the Remaining Phase 1 sites is tiered from this Draft Master EIR, and Reclamation anticipates that the Master EIR will be used as a tiering document for the project-level CEQA analyses of the Phase 2 projects.

The EIS portion of the Trinity River Mainstem Fishery Restoration EIS/EIR functions as a project-level NEPA document for 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 Project. However, the Trinity County Board of Supervisors chose not to certify the EIR portion because of the litigation in federal court. Lack of certification precludes use of that EIR as a first tier CEQA document. For this reason, the Master EIR and the EIR portion of the EA/EIR are intended to function as a complete, stand-alone CEQA document not dependent on any prior CEQA document for addressing impacts that must be analyzed under CEQA.

The CEQA Guidelines identify several types of EIRs, each applicable to specific circumstances. This document has been prepared to function as both a master and a project-level EIR, pursuant to California Public Resources Code Section 21156. A Master EIR evaluates at a programmatic level the direct and indirect environmental impacts, cumulative impacts, impacts, growth-inducing impacts, and irreversible significant effects on the environment of subsequent specific projects. A project-level EIR evaluates the environmental impacts of a specific project (CEQA Guidelines, Section 15161), focusing primarily on the changes in the environment that would occur because of project implementation and evaluates all phases of a particular project (i.e., planning, construction, and operation).

The Master EIR also meets the elements required for a Program EIR pursuant to California Code of Regulations, title 14, section 15168. A Master EIR and Program EIR serve similar functions in providing programmatic level review for which site-specific project may tier from. One substantive difference between the two types of documents is limitations on the use of a Master EIR if the document was certified more than five years prior to the filing of an application for a subsequent project. The Trinity River Restoration Project is expected to continue for more than five years from the certification of this document and state and federal agencies intend to rely on this programmatic analysis the length of the project. For subsequent site-specific projects proposed more than five years from certification of the Master EIR, the lead agency may rely on this document as a Program EIR, or in the alternative, make the findings under California Code of Regulations, title 14, section 15179.

The decision to prepare a stand-alone Master EIR and project-level EIR in the absence of a certified EIR for the Trinity River Mainstem Fishery Restoration is consistent with the CEQA Guidelines. To comply with the ROD, Reclamation, in cooperation with other federal agencies, is required to proceed with all of the measures outlined in the FEIS. The decision to facilitate mechanical channel rehabilitation projects and sediment management activities requires various permits from state agencies, including the Regional Water Board, as described in Chapter 3. The Regional Water Board's role extends beyond its CEQA responsibility to ensure that state and local permitting requirements are satisfied and that the Master EIR and project-level EIR portions of this NEPA/CEQA document are legally adequate for use by the Regional Water Board and the other state and local agencies responsible for CEQA compliance.

1.6 Scoping and Public Involvement

The Regional Water Board initiated the formal public scoping process by forwarding a Notice of Preparation (NOP) of an EIR to the State Clearinghouse on March 27, 2008. The NOP was circulated to the public; to local, state, and federal agencies; and to other interested parties to solicit comments on the Proposed Project. The public scoping period was March 27, 2008, through May 12, 2008, and scoping comments were received through September 15, 2008.

Reclamation and the Regional Water Board held a joint NEPA/CEQA scoping meeting on April 16, 2008, at the Douglas City Firehall in Douglas City, California. During this meeting, the Proposed Project was introduced and members of the public were asked to assist Reclamation and the Regional Water Board in identifying issues that should be addressed in this document. No substantive comments were brought forward during this public meeting, although the lead agencies' representatives responded to a number of questions. During the public comment period, the lead agencies received three scoping comments. These comments are summarized below.

- Native American Heritage Commission – Recommended that the lead agencies follow the standard protocol of consulting with Native American contacts in Trinity County. Also reinforced the need to comply with the CEQA Guidelines provisions pertaining to archaeological resources and Native American interests.

- Lewiston Trails Group – Recommended that mitigation measures be considered for impacts to the Lowden Ranch site related to recreational access and use. This letter referred to a letter submitted to the TRRP in 2004 regarding this group's interest in the Lowden Ranch area.

Two open house sessions to discuss the Remaining Phase 1 sites were also held in 1) Lewiston, California at the Moose Lodge on September 10, and 2) Douglas City, California at the Firehall on September 11, 2008.

The scoping process, in conjunction with informal input from members of the TMC and other stakeholders, led to a determination that the Proposed Project could result in significant impacts as defined by CEQA. This part of the document addresses the following issues:

- land use;
- geology, fluvial geomorphology, and soils;
- water resources;
- water quality;
- fishery resources;
- vegetation, wildlife, and wetlands;
- recreation;
- socioeconomics, population, and housing;
- cultural resources;
- air quality;
- aesthetics;
- hazardous materials;
- noise;
- public services and utilities/energy;
- transportation and traffic circulation; and
- cumulative impacts.

The issues listed above have been addressed in previous documents prepared by the TRRP, and no new issues emerged during the scoping process. These issues were used to develop the descriptions of the resource areas and the associated impact analysis presented in Chapters 4 and 7 of this document.

1.6.1 Public Review

This document is being circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the analysis provided in this Draft Master EIR and EA/Draft EIR. Publication of this document initiates the beginning of a 45-day public review period. The Regional Water Board and Reclamation will hold a public workshop during the review period at which public comment (written and oral) on the Draft Master EIR and EA/Draft EIR will be accepted.

However, to ensure proper interpretation of remarks, written comments are highly encouraged. The workshop is tentatively planned for June 2009 at the Trinity Public Utility District office, 26 Ponderosa Lane (off Highway 299), Weaverville, California.

A notice of the time and location of the public workshop will be published in the Weaverville Trinity Journal newspaper at least one week in advance. All written comments and questions regarding this document that raise issues under NEPA, CEQA, or both, should be addressed to:

Brandt Gutermuth, Environmental Specialist
Trinity River Restoration Program
United States Department of the Interior – Bureau of Reclamation
P.O. Box 1300
1313 South Main Street
Weaverville, California 96093
bgutermuth@mp.usbr.gov
Phone: (530) 623-1800,
Fax: (530) 623-5944

Mr. Gutermuth will ensure that the Regional Water Board, as the CEQA lead agency, receives copies of comments submitted so that it can review and respond to them, as required by CEQA. This document will be sent to the State Clearinghouse and will be available online at the TRRP and Reclamation websites: *http://www.trrp.net/implementation/remainingP1.htm* and *http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=3138.*

Copies of this document will be available for review at the following locations:

Trinity River Restoration Program
United States Department of the Interior
Bureau of Reclamation
1313 South Main Street
Weaverville, California 96093

U.S. Department of Interior
Bureau of Land Management
Redding Field Office
355 Hemsted Drive
Redding, CA 96002

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

Trinity County Library, Weaverville Branch
211 Main Street
Weaverville, California 96093

U.S. Forest Service
(Trinity River Management Unit)
Weaverville Ranger Station
360 Main Street
Weaverville, California 96093

Copies of all referenced documents, as well as the December 19, 2000 ROD and the Trinity River Mainstem Fishery Restoration FEIS/EIR, are available for public review at:

Trinity River Restoration Program Office
U.S. Department of the Interior – Bureau of Reclamation
1313 South Main Street
Weaverville, California 96093

CHAPTER 2

Proposed Project and Alternatives Development

Chapter 2
Project Description and Alternatives Development

This chapter describes the project objectives and discusses the process used to develop the alternatives analyzed in this document. It also describes the design criteria, design concepts, and site locations associated with the action alternatives. Three alternatives are considered in this document: the No-Project Alternative, the Proposed Project, and Alternative 1. Alternatives considered but not selected for evaluation are also briefly discussed. The term Proposed Project rather than Proposed Action is used for consistency; for the purposes of this document, the two terms are synonymous.

2.1 Background

The Trinity River Mainstem Fishery Restoration FEIS/EIR identified 44 potential channel rehabilitation sites and three potential side channel sites between Lewiston Dam and the North Fork Trinity River (U.S. Fish and Wildlife Service et al. 2000). These sites were originally prescribed for rehabilitation in the Trinity River Flow Evaluation Report (U.S. Fish and Wildlife Service and Hoopa Valley Tribe 1999) and included in the preferred alternative identified in the ROD. The ROD prescribed that the rehabilitation efforts at these sites be implemented in phases. Early TRRP planning efforts resulted in the identification of two phases, Phase 1 and Phase 2. Subsequently, in a detailed review of the ROD sites, these 47 sites were further defined and a list of 104 specific sites was established to facilitate the TRRP planning process. Tables 1-1, 1-2, and 1-3 in Chapter 1 show the relationship between the sites identified in the ROD and the sites defined subsequent to the ROD. Ultimately, sites at which rehabilitation activities could be implemented were selected using criteria that identified physical features and processes such as channel morphology, sediment supply, and high-flow hydraulics that would encourage a dynamic alluvial channel. Factors such as property ownership, access to the sites, and engineering and economic feasibility were also considered in the site selection process.

The first of the post-ROD channel rehabilitation projects (Hocker Flat, Canyon Creek, and Indian Creek) focused on modifying alluvial features, including berm removal at sites where pronounced fossilized riparian berms developed in response to changes in the flow regime and sediment flux that resulted from construction and operation of the TRD. Although berm removal and reforming alluvial features continue to be emphasized in conjunction with ongoing channel rehabilitation efforts, the restoration of alluvial processes, coupled with the creation of high-value (low velocity and close proximity to vegetation) margin and side-channel habitat, will enhance the TRRP's objective of increasing habitat for anadromous fish. This approach is consistent with the recognition in the Trinity River Mainstem Fishery Restoration FEIS/EIR that the rehabilitation sites exhibit a variety of conditions that require site-specific designs. The FEIS/EIR also acknowledged that, in many instances, an entire site would not require treatment to facilitate rehabilitation. This is because strategically treating certain areas is expected to result in fluvial

processes that will promote the formation and maintenance of complex fish habitat (e.g., alternating channel bars) in both treated and untreated sections of the river.

The TRRP has developed a number of programmatic objectives for the channel rehabilitation sites that help frame the alternative development process consistent with CEQA. The programmatic objectives are intended to be used to identify specific activities that could be implemented at the sites discussed in this document. Consistent with these objectives, the goal of the channel rehabilitation activities described and evaluated in this document is to reestablish fluvial processes and to improve the quality and quantity of habitat for anadromous fish. The TRRP has identified 15 discrete activities that are incorporated into the Proposed Project, as described further in this chapter. Over the past 4 years, the TRRP has implemented one or more of these activities at the first 16 Phase 1 sites (see Table 1-1) in association with the Hocker Flat, Canyon Creek, Indian Creek, and Lewiston–Dark Gulch projects.

The alternative development process considered input from stakeholders, particularly local residents and resource agency personnel; existing engineering data; and social, physical, and biological factors. The intent of the Master EIR is to provide CEQA compliance for activities at both the Remaining Phase 1 and Phase 2 sites; because the design concepts are further developed for the Remaining Phase 1 sites, the following sections provide more detail for these sites. For Phase 2, this process was based on more general concepts that facilitate a programmatic review and allow distinctions to be made between the Proposed Project and the alternatives during subsequent environmental reviews.

Consistent with the AEAM Program, the Proposed Project reflects the collective experience of the TRRP and the TMC from the implementation of previous mechanical channel rehabilitation projects (Hocker Flat, Canyon Creek, Indian Creek, and Lewiston–Dark Gulch). Information derived from the implementation of these projects, coupled with information on the biological and physical responses to these projects, was considered in the alternatives development process.

2.2 Goals and Objectives

Collectively, the activities included in the Proposed Project are intended to meet the overarching goal of the TRRP: create, restore, and enhance the full range of habitats for native anadromous fishes, including salmon and steelhead. This document focuses on activities that are intended to restore fluvial processes through the rescaling of the river channel and floodplain within, and to some extent beyond, the boundary of a specific rehabilitation site. Consequently, fluvial processes are expected to affect a larger area than the specific Remaining Phase 1 and Phase 2 sites based on successful TRRP rehabilitation projects constructed over the past 4 years. At discrete sites, specific in-channel (below water line and contiguous with the active channel during construction) and riverine (within the ordinary high water line, but not contiguous with the active channel) activities in conjunction with coarse and fine sediment management will assist in reestablishing fluvial processes and interactions. These rehabilitation activities could result in the rapid development of a larger and more complex expanse of river and floodplain habitats. This habitat expansion is expected to increase habitat suitability and availability for salmonids and other native fish and wildlife species at various river flows.

With input from stakeholders, the lead agencies considered the following objectives in the alternative development process:

- Protect and/or enhance the outstandingly remarkable values (ORVs) associated with the designation of a Wild and Scenic River (federal and California).
- Induce changes in channel geometry in response to constructing channel and floodplain features designed for the river's current and future hydrologic regime.
- Evaluate the evolution of channel planform features in response to designing and implementing the Proposed Project at a river segment (1-mile) scale.
- Evaluate the biological response (aquatic, riparian, upland) to changes in the physical environment and incorporate this information into the AEAM Program.
- Provide safe and reasonable access as required to support project planning, implementation, and monitoring.
- Develop partnerships with willing participants and encourage positive landowner interest and involvement.
- Use the post-ROD flow regime as the basis for site design.
- Integrate known fluvial and ecological theories and relationships with the sites' measured physical and biological attributes and evaluate the response over a definitive period.
- Balance the benefits of rehabilitation activities in a manner that minimizes or reduces the resource impacts at one or more sites.
- Where practicable, preserve unique and valuable geomorphic and biological features such as hydraulic controls, high-quality spawning or adult holding habitat, and cottonwood galleries.
- Facilitate recovery of native fish and wildlife resources that are in decline or are listed as threatened or endangered.
- Encourage the use of bioengineering techniques (e.g., use of wood and vegetation) as needed to protect and/or stabilize private properties while providing aquatic habitat.

The following objectives apply to the lead, cooperating, responsible, and trustee agencies for the Proposed Project, including the USFS, BLM, Regional Water Board, the HVT, the YT, the State Lands Commission (SLC), CDFG, Caltrans, Trinity County, and the TCRCD:

- compliance with the California Water Code and the Water Quality Control Plan for the North Coast Region (Basin Plan) to ensure the highest reasonable quality of waters of the state and allocation of those waters to achieve the optimum balance of beneficial uses;

- protection of the public trust assets of the Trinity River watershed;
- conservation, restoration, and management of fish, wildlife, native plant, and jurisdictional wetland resources; and
- compliance with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation and to protect the beneficial uses of water.

2.3 Mechanical Channel Rehabilitation Activities and Activity Areas

This document is informed by a multi-scale planning effort that focuses on the Remaining Phase 1 and Phase 2 sites along the Trinity River. The 2000 ROD emphasized the following rehabilitation activities: selectively removing fossilized berms and encroaching riparian vegetation; revegetating and/or reestablishing complex and diverse assemblages of native riparian vegetation; and recreating alternate point bars and complex fish habitat similar in form to those that existed prior to the construction of the TRD. This section describes these channel rehabilitation activities in light of present information and the locations where they would occur under the Proposed Project, beginning with a summary of the criteria used to define these activities. Also described are the proposed coarse and fine sediment management activities, which could be conducted concurrently with the mechanical channel rehabilitation activities or as stand-alone projects over an extended period. The ROD acknowledged the need for coarse sediment augmentation downstream of the Lewiston Dam for the life of the TRD. Although the TRRP has developed specific objectives for the Phase 2 sites as well as specific activities that could occur, the planning for these sites remains conceptual at this time.

2.3.1 Rehabilitation Criteria

As stated previously, the TRRP has developed a number of programmatic objectives for channel rehabilitation projects. The following criteria provide the basis for the development of the Proposed Project, including both the Remaining Phase 1 and Phase 2 sites. These criteria provide the basis for the type and location of activities described in the following sections. Specifically, they are intended to be used to:

- increase the area, quality, and availability of habitat for anadromous salmonids (specifically fry, juvenile, and spawner life stages) over a range of flows;
- increase the structural complexity of the types of riverine habitat available and thereby increase the range of anadromous salmonid life histories that can be supported;
- increase the overall surface area of the channel that would be inundated at various flows, thereby enhancing opportunities for development of complex riparian habitat;
- establish conditions such that the ROD flow regime will frequently scour the bed of the river surfaces and inhibit the development of berms;

- recruit a diverse assemblage of riparian vegetation into areas that may provide fish habitat as well as onto the surfaces within and above the OHW [ordinary high water mark], including floodplain surfaces that are not subject to high-flow scouring;
- develop a sequence of point bars by encouraging lateral migration of the channel at flows characteristic of the 2.5-year recurrence interval discharge;
- develop low-water alcoves at the base of side channels or scour channels that provide low-velocity aquatic habitat at flows ranging from approximately 300 to 6,000 cfs;
- develop side channels that will function at flows of 300 cfs or greater;
- develop high-flow scour channels that will function at flows $\geq$6,000 cfs;
- increase the area, quality, and availability of habitats for native wildlife species that may benefit from enhancement of the form and function of the riparian corridor (e.g., migratory birds, western pond turtles (*Actinemys marmorata*), and yellow-legged frogs (*Rana boylii*));
- increase recreation opportunities (e.g., fishing access, watchable wildlife facilities) along the Trinity River corridor consistent with federal, state, and local requirements and guidelines (e.g., the STNF Land and Resource Management Plan (LRMP), and BLM Resource Management Plan (RMP)); and
- reduce the occurrence of noxious and invasive plant species (e.g., Himalayan blackberry and yellow star thistle (*Rubus discolor* and *Centaurea solstitialis*)).

2.3.2 Rehabilitation Activities

One or more of the activities listed in Table 2-1 could be implemented at each of the Remaining Phase 1 or Phase 2 sites. Specific activities have been identified for each activity area among the Remaining Phase 1 sites; in contrast, activities at Phase 2 sites are conceptual, but would include some or all the activities listed in Table 2-1. As the table shows, each activity has been assigned an alphabetic label; these labels are used throughout this document.

The type, area, and magnitude of activity within each site boundary vary, based on a number of factors. For the Remaining Phase 1 sites, discrete activity areas were defined by the interdisciplinary design team to include riverine areas, upland areas, and construction support areas. While these areas are intended to encompass the full range of activities, typically the actual area that will be treated would be smaller. For each Remaining Phase 1 site, riverine areas are labeled with an R preceding the site number (e.g., R-1, R-2); upland areas are labeled with a U (e.g., U-1, U-2); in-channel work areas (e.g., gravel placement or grade control removal) are labeled with an IC; and staging/use areas are labeled with a C. Temporary channel crossings are labeled with an X, and roads are identified as existing or new. As explained above, specific activities for each of the Phase 2 sites have not yet been identified, but they could include one or more of the activities identified in Table 2-1.

Table 2-1. Rehabilitation Activities

Label	Activity Type
A	Recontouring and vegetation removal
B	Construction of inundated surfaces (450 cfs)
C	Construction of inundated surfaces (1,000 – 4,500 cfs)
D	Construction of inundated surfaces (6,000 cfs)
E	Low-flow side channels (300 cfs)
F	Medium-flow side channels (1,000 cfs)
G	Alcoves (450 cfs; 6,000 cfs)
H	Grade control removal
I	Sediment management (coarse and fine)
J	Placement of excavated materials
K	Staging/use areas (includes gravel processing and stockpiling)
L	Roads, existing
M	Roads, new
N	Temporary channel crossings (Trinity River and tributaries)
O	Revegetation

Activities described below are intended to emphasize modifying existing grade control features, reconnecting the river's floodplain with the river, establishing or expanding side-channel habitat, and enhancing the bed and banks of the Trinity River to promote well-distributed aquatic habitat over a range of flows. Removal of alluvial material at select locations within the IC areas could provide opportunities to enhance the development of alternate point bars and supplement coarse sediment. Collectively, these activities are intended to enhance aquatic habitat for anadromous fish under a range of flow conditions.

In addition to the activities included in Table 2-1, several others are common to all activity areas to varying degrees. These common activities—vegetation removal, watering, and monitoring—are briefly discussed at the end of this section.

Activity A (Recontouring and Vegetation Removal)

The ground surface would be modified to reduce riparian encroachment and minimize the risk of stranding of juvenile salmonids. Vegetation would be cleared at some locations, but in most cases would not be removed from the activity area. Activity A also includes grading to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill will be balanced such that there is no net change in the volume of earthen material within the activity area. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment, such as excavators, bulldozers, scrapers, and dump trucks.

Activities B, C, and D (Construction of Inundated Surfaces – 300 cfs, 1,000 to 4,500 cfs, and 6,000 cfs)

Activities associated with the construction of inundated surfaces would enhance the connection of these surfaces to the river at various flows. As a reference point, the ordinary high water mark (OHW) correlates to a 1.5-year recurrence flow (6,000 cfs as measured below Rush Creek; 6,600 cfs as measured below Canyon Creek). These activities are intended to expand the surface area of the channel that could be inundated by reoccurring flows below the OHW mark and cause more frequent inundation of these surfaces. Vegetation would be cleared as necessary, and earth would be excavated to meet design elevations for periodic inundation.

These newly inundated surfaces would provide important rearing and slow-water habitat for juvenile salmonids and other native anadromous fish. They would also provide low points that could enhance sinuosity and thereby provide the habitat variability that was historically present and is required to support rapid growth of native fishes.

These treatment areas would rely on a combination of natural recruitment of native riparian vegetation and riparian planting to enhance the establishment of a diverse assemblage of native vegetation. If initial revegetation establishment is less successful than anticipated, additional efforts will be made to establish riparian vegetation consistent with the CDFG policy of no net loss in riparian vegetation from pre-project levels.

Activities E and F (Side Channels – 300 cfs; 1,000 cfs)

Modifications to historic side channels would reconnect the Trinity River with its floodplain at targeted flows. Side channels constructed for 300 cfs flows would provide off-channel, low-velocity habitat for a variety of aquatic organisms, including juvenile salmonids. Side channels constructed for 1,000 cfs flows would provide habitat for salmonid rearing when water is flowing through the channels. As flows recede, these side channels would drain naturally, reducing the likelihood of stranding of aquatic organisms.

Side channels would be constructed to leave small berms at the upstream and downstream ends to protect water quality during construction. These berms would be removed at the end of construction if the water in the side channel is of appropriate quality for discharge to the river or the water in the side channel will be left in place for removal by subsequent high flows. Side channels may be pumped to uplands and dewatered during construction to remove turbid water before opening the side channel to the river.

Activity G (Alcoves – 300 cfs)

Alcoves would be excavated to design elevations at the downstream end of side channels (300 cfs) or other appropriate locations. These would be continuously inundated (approximately 1–2 feet deep during low flows) and would provide year-round juvenile fish habitat.

Activity H (Grade Control Removal)

Grade control structures, including constructed features, would be removed to increase channel complexity via promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of bars.

Activity I (Sediment Management, Coarse and Fine)

In addition to site-specific creation and enhancement of alluvial features (bars), sediment management activities would occur at various sites. Sediment management activities include augmentation of coarse sediment (e.g., spawning gravel) and removal of fine sediment (0.5-0.8 millimeter size fraction) at key locations. Long-term, large-scale coarse sediment augmentation sites would be established at select locations to encourage channel migration and the development of alternate bars. Augmentation activities also include efforts required to provide a long-term supply of coarse sediment and ensure that the TRRP has the administrative access necessary to implement these activities at specific locations. Selected vegetation would be removed to facilitate the introduction of this coarse sediment along the channel margin. As appropriate, salvaged large woody debris (LWD) would be retained and incorporated into riverine/in-channel activities to provide additional habitat complexity. Coarse sediment would be introduced via mechanized equipment (e.g., conveyor, mechanical placement below the OHW) into the river channel under various high-flow conditions in a manner that facilitates the river's ability to route the coarse sediment downstream during high-flow periods. Injection of coarse sediment during peak ROD spring flows would not require in-channel placement with equipment; however, in-channel placement during summer project construction would require equipment placement during low-summer flow conditions.

Fine sediment management activities are concentrated at the Hamilton Ponds on Grass Valley Creek, near its confluence with the Trinity River. These activities involve periodic excavation of the Hamilton Ponds to remove accumulated fine sediment.

Activity J (Placement of Excavated Materials)

Excavated materials would be placed in spoils areas so that there would be no increase in the elevation of the 100-year flood to comply with the requirements of Trinity County's Floodplain Ordinance. Spoiled materials would be spread in uniform layers that blend with the natural terrain. In general, revegetation of upland areas, including efforts required for erosion control, would be consistent with agency requirements and with authorization from land managers and owners. Refer to Activity O (Revegetation) for more information.

Activity K (Staging Areas)

Excavated materials would be transported across the staging areas to stockpile areas. Water would be applied for construction purposes, including dust abatement, as directed by the Contracting Officer. At select sites, staging areas may also be used for the processing and storage of coarse sediment required for long-term sediment management activities.

Activity L and M (Roads, Existing and New)

Existing roads would be used to access most activity areas within the Remaining Phase 1 and Phase 2 sites. Individual road segments may be used for one or more activities (e.g., access for equipment and personnel, removal of material, revegetation efforts, and monitoring activities). Roads used for TRRP activities may be constrained by load limits or other stipulations of the landowner/manager and may require substantial improvements (e.g., widening, surfacing).

The location of some activity areas would require construction of new roads for specific project purposes. Site-specific locations will consider factors like topography, soils, existing vegetation, and the need for future vehicle access. Best management practices (BMPs) will be used to reduce the impacts of road-related sediment on the riparian and aquatic environments.

Activity N (Temporary Channel Crossings)

Temporary crossings would provide access across the mainstem Trinity River, existing and constructed side-channels, and tributaries. These temporary crossings may include constructed fords, temporary bridges, or other site improvements to facilitate access for construction-related traffic. If required, temporary bridges would be used when crossings will be made outside of the summer (July 15-September 15) in-channel work window. All temporary crossings will be designed and constructed to meet the requirements for heavy equipment such as trucks, excavators, and scrapers. Fords would be constructed using native alluvial materials excavated from the bed and bank of the Trinity River or adjacent sources. With the exception of rip-rap or other stabilizing materials, material will be primarily extracted from activity areas within identified TRRP sites.

Due to requirements to retain navigability and minimize impacts to aquatic resources, ford crossings would be submerged to depths of at least 1 foot under low-flow conditions. The construction of the temporary crossings would likely require some vegetation removal at entrances and exits to the channel. If temporary bridges or other constructed crossings are used, abutment material may be extracted from activity areas. All temporary crossings will be constructed in a manner that does not impede navigability at the specific site.

Activity O (Revegetation)

Impacts to vegetation are anticipated at most of the activity areas. Revegetation of riparian areas would rely primarily on natural recruitment of native species; however, if necessary, vegetation planting would occur to address landowner requests and fish and wildlife requirements. In general, the TRRP objective is to ensure that riparian vegetation impacted by TRRP activities is replaced at a 1:1 ratio within the Trinity River corridor. Additional planting, seeding and mulching is also planned to control or inhibit the reestablishment of noxious and invasive plant species.

Common Activities

Three activities are common to all sites, although the extent and magnitude of these activities would vary. These common activities, vegetation removal, water use, and monitoring, are broadly described below.

Vegetation Removal

Vegetation would be removed at all sites, as follows:

- 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 LWD will be retained for use in the floodplain to enhance fish habitat.

- Dispose of removed vegetation by chipping, hauling offsite, burning, burying within spoils areas, or other appropriate methods. Reclamation will continue to work with local agencies 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 will 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.

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 on-site seep wells or the Trinity River. When drafting from the Trinity River, pump intakes would be in conformance with criteria established by NMFS and CDFG 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 feet per second (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 CDFG 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.

Monitoring

The 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 AEAM 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 will 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 will 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 will 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 will be integrated into the Mitigation Monitoring and Reporting Plan (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*

2.3.3 Activity Areas

Each of the Remaining Phase 1 sites has been organized into discrete activity areas to help ensure consistent project management and implementation. A brief description of each type of activity area is

provided in the following section. As stated previously, Phase 2 sites are not addressed in the same level of detail.

In-Channel Activity Areas (IC)

In-channel (IC) activity areas are intended to reestablish the properly functioning condition of the river (e.g., dynamic alternate bar sequences) as described in the Trinity River Mainstem Fishery Restoration FEIS/EIR. A variety of construction techniques will be used to modify gradient; diversify the type and location of alluvial features (e.g., point bars); provide functional side channels under a range of flows; and establish locations for the addition of coarse sediment. The TRRP expects to place an average of 10,000 to 15,000 tons of clean coarse sediment in the Trinity River annually, either in conjunction with specific channel rehabilitation activities or at sites established as long-term injection points. Long term is viewed as the next 20 years and beyond. The volume would vary on an annual basis based on the water year type, available coarse sediment, and the TRRP flow release schedule.

Riverine Activity Areas (R)

Riverine (R) activities would require removal of vegetation and excavation of alluvial material from the bed and banks of the Trinity River. These activities emphasize modifying the bed and banks of the Trinity River, allowing reestablishment of the alluvial processes impaired by the construction and operation of the TRD. Such modifications at strategic locations would promote the river processes necessary for the restoration and maintenance of alternate bars and over-bank flows, thereby enhancing rearing habitat for native aquatic organisms. Additionally, construction of alcoves, low-flow side channels, and high-flow scour channels would maintain and/or provide habitat that would be available to juvenile salmonids and other native aquatic organisms over a range of flows.

Upland Activity Areas (U)

The objectives for all upland (U) activity areas are to establish a suitable location for the disposal of excavated material (i.e., sand, gravel, cobble, and cleared vegetation, primarily from the riverine areas), provide a long-term location for stockpiling coarse sediment that would be available for gravel supplementation and, to a reasonable extent, encourage reestablishment of native upland vegetation. Additionally, the activities occurring at these areas would include measures to enhance upland and riparian habitat, while inhibiting the introduction and spread of noxious and invasive vegetation, notably Himalayan blackberry, yellow star-thistle, and Dalmatian toadflax (*Linaria genistifolia*).

Specific design criteria have been established for the disposal of excavated material in upland areas. The criteria include placing material above the 100-year floodplain elevation to minimize impacts to Federal Emergency Management Agency (FEMA) base flood elevations (BFE) and identifying locations that would not inhibit future land use activities, such as recreation access and parking. The criteria also include using existing topographic features to reduce observable changes in the line and form of tailing piles.

Staging Areas (C)

Staging areas are required for construction activities, including gravel processing, storage of equipment and materials, temporary placement of topsoil, and placement of necessary sanitation facilities. Project activities may include construction of temporary access routes (N-Roads) to and between staging areas and activity areas. Additionally, these areas may be used for the processing and storage of coarse sediment required for long-term sediment management activities. At the completion of the project, remediation measures will be performed at the staging areas and access routes in accordance with realty agreements with individual landowners.

Roads (M, N)

Existing roads and access routes (M) in the project vicinity would be evaluated and upgraded as necessary to provide the necessary access. Any new roads and access routes (N) required would be constructed to the standard necessary to limit impacts from erosion and runoff. New roads would be decommissioned at project completion when requested by landowners.

Temporary Crossings (X)

Some activities and treatments may require construction of temporary stream crossings (X) over the Trinity River or its tributaries to provide access for vehicles and construction equipment during low-flow conditions (approximately 300 to 600 cfs). All temporary stream crossings would incorporate design specifications appropriate to address resource impacts identified in this document.

2.3.4 Sediment Management Activities

In addition to the mechanical channel rehabilitation projects, the Proposed Project includes implementation of a Sediment Management Plan. Sediment management activities, directed toward both coarse and fine sediment, would occur primarily at sites above Weaver Creek, as shown on Figure 1-2.

Coarse Sediment Management

In addition to site-specific placement and/or removal of coarse sediment at the Remaining Phase 1 and Phase 2 sites described in this document, the Proposed Project includes long-term coarse sediment augmentation at five sites illustrated in Figure 1-2. Located downstream of Lewiston Dam, these sites were selected by the TRRP in consultation with the TMC in order to ensure that introduced material is transported downstream to replenish the alluvial material that is remobilized over time.

Augmentation at these five sites is expected to occur primarily during high spring flows when coarse sediment may be introduced to the river mechanically by the TRRP and immediately transported downstream. In addition, coarse sediment placed at the Lewiston–Dark Gulch Project in 2009 or at the long-term introduction sites may also be directly placed in-channel with heavy equipment during summer low-flow conditions (within the July 15 through September 15 work window). The TRRP, along with TMC representatives, will use ongoing monitoring in conjunction with water year projections to determine the precise location and extent of these activities on a yearly basis. The TRRP flow release

schedule will also be a factor in determining the volume of material used for augmentation during high-flow periods.

Fine Sediment Management

Over time, restoration activities in the Grass Valley Creek watershed, including construction of two sediment retention ponds at the mouth of Grass Valley Creek (see Figure 1-2), have reduced the overall contribution of fine sediment to the mainstem Trinity River. These ponds—Upper and Lower Hamilton ponds—require periodic maintenance (i.e., dredging) to restore their storage capacity. The need to dredge Upper Hamilton pond is based on: 1) the water year and 2) the amount of accumulated fine sediment retained during the water year. Typically, in wet and extremely wet years, the ponds retain more fine sediment than during dry years. For purposes of this document, Upper Hamilton pond may require dredging on an annual basis for the next 5-10 years.

Typically, pond maintenance consists of the following steps:

- Inflow to the upper pond is closed by diverting Grass Valley Creek flow into a bypass channel. The permeability of the alluvial material ensures that some water remains in the pond during dredging activities.
- The dredging area is isolated from the rest of the pond using a turbidity curtain.
- Fine sediments (e.g., silt, clay, and sand$\leq$ 8 mm[1]) are removed from the pond using an excavator and a dump truck.
- Dredge material is placed at a disposal site within the Lowden Ranch (LR) site boundary.
- The turbidity curtain is removed, and inflow to the basin is restored.

2.3.5 Bank Stabilization Measures

Sediment management includes measures to address bank erosion that could affect aquatic and/or riparian habitat or the infrastructure (e.g., wells, levees, drain fields) that has been constructed along the Trinity River. These measures may be used to minimize erosion at Remaining Phase 1 or Phase 2 sites or at other locations (i.e., private property protection) within the 40-mile reach of the Trinity River influenced by TRRP actions. Although bank erosion is a natural process that can be beneficial by providing a source of coarse sediment, bank stabilization measures may in some instances be implemented in a way that balances the benefits to habitat with the impacts to the human environment.

Several factors influence the specific bank stabilization measures discussed in this section. Hydrology and channel morphology are key factors in determining the type, location and level of effort required to stabilize eroding banks. Access and availability of materials and, to some extent, the various regulatory requirements determine the feasibility and overall applicability of these measures.

[1] Fine sediment is defined as the size fraction capable of passing through an 8 mm mesh screen.

While there are a wide range of bank stabilization measures available to address site-specific erosional processes along the river, the measures specified in the California Salmonid Stream Habitat Restoration Manual, Third Edition are considered adequate to address the range of bank erosion sites within the 40-mile reach of the Trinity River below Lewiston Dam. Measures that incorporate bio-engineering elements, using native materials are more likely to be consistent with regulatory requirements. Bank stabilization measures with bio-engineering elements could include:

- log cribbing,
- live vegetated crib wall,
- log bank armoring,
- log wing deflectors,
- tree revetment,
- native material revetment,
- willow wall revetment, and
- willow siltation baffles.

Depending on actual site conditions, one or more of these measures may be used as modified to meet the specific stabilization objectives. Additional revegetation efforts using native vegetative materials could also be used to enhance the stabilizing qualities of these structures. The following websites identify approaches to bioengineering techniques that are typically considered by federal, state, and local agencies (*http://plant-materials.nrcs.usda.gov/technical/riparian.html*, *http://www.dfg.ca.gov/nafwb/manual.html*).

2.4 Description of Remaining Phase 1 and Phase 2 Sites

2.4.1 Remaining Phase 1 Sites

The Remaining Phase 1 sites include Sawmill, Upper Rush Creek, Lowden Ranch, Trinity House Gulch, Steel Bridge Day Use, and Reading Creek. The location and specific rehabilitation objectives for each site are described below.

Sawmill (SM)

This site is located between RM 108.9 and 109.7. The river at this site has a relatively coarse bed, owing to the transport deficit typical of this reach. Much of the channel is relatively steep, straight, and simple. Post-dam and pre-ROD riparian encroachment and extensive dredge tailing deposits constrain fluvial dynamics. Although the side-channel complex on river right is functional and provides some habitat value, shallow edge habitat is lacking and riparian/floodplain habitat is limited. The dredge tailings offer a source of coarse sediment for gravel augmentation. Over time, several artificial grade controls that were installed in the main channel have failed and continue to pose hazards to navigation.

Objectives at this site include removal of artificial grade controls, lowering of adjacent floodplain surfaces, and removal of vegetation that restricts river access to the floodplain. Planned additions of

coarse sediment are expected to foster a self-maintaining, dynamic, complex, and sinuous morphology affording improved habitat conditions for fish and wildlife.

Upper Rush Creek (UR)

This site is located between RM 107.9 and 108.8. The site is dominated by the presence of the Rush Creek delta at the downstream end of the site. A side channel constructed for fish rearing along the left bank has several artificial grade controls (including a tarp dam) that inhibit flow, thereby reducing potential ecological values. A constructed berm isolates the side channel and limits its ability to function under the full range of flows. Over time, floodplain and backwater/off channel habitats along the right bank near the upstream boundary have been influenced by residential and recreational developments; the riparian area on the downstream left bank appears to be isolated from the main channel.

Objectives at this site include the removal of artificial grade controls, lowering of floodplain surfaces, placement of LWD, and removal of vegetation that restricts river access to its floodplain. The resulting increase in salmonid habitat would benefit from the placement of LWD in the constructed side channel. Finally, the removal of invasive vegetation (e.g., Himalayan blackberry) would help to promote fluvial processes.

Lowden Ranch (LR)

This site is located between RM 104.0 and 105.4. The river at this site is confined by tailings piles along the left bank. The channel is straight and lacks meanders that are proportional to the post-TRD flow regime.

Objectives at this site include the addition of coarse sediment, removal of tailing piles, lowering and reconnection of the floodplain, and enhancement of complexity via other means that are used to restore fluvial processes. In conjunction with the proposed channel rehabilitation activities, this site also provides an opportunity to implement site-specific bank stabilization measures on a private parcel within the site boundary. In addition, this site could be used as a long-term gravel injection site in conjunction with sediment management activities.

Trinity House Gulch (THG)

This site is located between RM 104.0 and 104.3. The upstream site boundary is contiguous with the LR site and immediately below the confluence with Grass Valley Creek. The river in this reach is alluvial, but steep banks confine the channel and isolate it from the adjacent floodplain. Encroachment of riparian vegetation, combined with simplified channel geometry, limits the availability and diversity of aquatic habitat over a range of flows. The ecological function of the site is also impaired by a lack of shade and riparian cover.

The post-TRD influence of Grass Valley Creek, including extensive accumulations of fine sediment has isolated the river from historic floodplains on both sides of the river. Over the past several decades, extensive efforts have been made to reduce the fine-sediment contribution of Grass Valley Creek to the Trinity River. To date, these efforts have resulted in substantial reductions in fine sediment that is

transported and available for deposition downstream. Locally, this effect has reduced the amount of fine sediment that may be deposited on the alluvial features in the vicinity of the THG site.

Objectives at this site include lowering the floodplain in order to increase connectivity under a range of flows, reconnecting the main channel to the right bank via a constructed side channel and/or backwater feature, and removal of encroaching riparian vegetation.

Steel Bridge Day Use (SB)

Located between RM 98.6 and 98.9, this site is at the upstream end of a sharp bend in the river controlled by valley morphology. A small riparian berm on the left bank limits channel/floodplain connectivity and the alluvial processes have been simplified, thereby reducing habitat quality and quantity. Prior to the ROD, post-TRD flows resulted in riparian encroachment at select locations within this site.

Objectives at this site include berm and vegetation removal to enhance shallow edge habitat over a range of flows, construction of several point bars, and lowering the historic floodplain in order to increase habitat complexity under a range of flows. Planting of a conifer and riparian forest on the left bank above the OHW mark could encourage the establishment of a diverse riparian forest and provide future wood recruitment to the river.

Reading Creek (RC)

Located between RM 92.2 and 93.5, this site encompasses a large bend controlled by valley morphology. The development of post-TRD berms in conjunction with various features associated with several periods of mining activity (e.g., ponds, dredge tailings, roads) have modified the alluvial form and function of the river at this site. Extensive alterations to the topography throughout this site make it difficult to understand fully the changes to the bed and banks of the river. As the river straightens downstream of the bend, large sand deposits (berms) have formed along the margin, suggesting a change in the depositional environment. Over time, these berms, coupled with dense riparian vegetation, have confined the channel, resulting in further isolation from the floodplain, particularly under post-ROD flow conditions. These conditions inhibit dynamic geomorphic processes from occurring and have greatly reduced salmonid habitat (especially salmonid rearing and other low-velocity aquatic habitats) at a range of flows. The adjacent upland surface is largely abandoned by the effects of the post-dam flow regime and is hydrologically disconnected under the post-ROD flows, further limiting low-velocity aquatic edge habitats. Several areas have ponds behind a berm section, which likely promote stranding of fish.

Objectives at this site include removal of berms and excavation of terraces (constructed floodplains) to increase low-velocity areas and add off-channel areas to increase aquatic habitats. Lowering of adjacent uplands and revegetation will enhance riparian and upland vegetation and improve cover and riparian habitat. Lowering of unnatural high-elevation areas along the channel, along with removal of some of the monotypic even-aged, narrow stands of alders associated with berms, could promote alluvial processes and channel complexity, and improve associated habitat values and functions. Placement of fill at select locations could reduce the likelihood of stranding fish, while creating potential riparian and wetland habitat.

Activity Areas

In total, 158 discrete activity areas were identified by the TRRP within the boundaries of the Remaining Phase 1 sites. Each site is labeled using an alphabet system that corresponds to the site name. The site name, alpha code, and corresponding figure illustrating the site are listed below.

- Sawmill SM Figure 2-1a
- Upper Rush Creek UR Figure 2-1b
- Lowden Ranch LR Figure 2-1c
- Trinity House Gulch THG Figure 2-1d
- Steel Bridge Day Use SB Figure 2-1e
- Reading Creek RC Figure 2-1f

Table 2-2 lists the activity areas associated with the Remaining Phase 1 sites. Each activity area has been assigned a unique identifier that corresponds to the type of activity area and the site name. For example, U-1 SM is the identifier for upland activity area 1 at the SM site. The table also shows the size of the activity areas, whether they are located on the right or left bank of the Trinity River (looking downstream), and the primary use anticipated for each area.

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
Sawmill Site (103.42 Acres within the Site Boundary)			
U-1 SM	0.833	Right	Stockpile location
U-2 SM	1.384	Right	Stockpile location
IC-1 SM	0.064	Left	Grade control removal
IC-2 SM	0.163	Left	Course sediment addition
IC-3 SM	0.413	Right	Course sediment addition
R-3 SM	0.053	Right	Side channel
IC-5 SM	0.216	Right	Course sediment addition
IC-4 SM	0.819	Right	Course sediment addition
IC-6 SM	0.205	Right	Course sediment addition
IC-7 SM	0.219	Left	Course sediment addition
IC-8 SM	0.230	Right	Course sediment addition
IC-9 SM	0.298	Right	Course sediment addition
IC-10 SM	0.347	Left	Course sediment addition
IC-11 SM	0.282	Left	Course sediment addition
R-1 SM	0.447	Right	Constructed inundation surface
R-4 SM	0.241	Right	Course sediment addition

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
R-5 SM	0.096	Right	Low flow side channel
R-2 SM	3.878	Right	Constructed inundation surface
R-6 SM	0.207	Right	Constructed inundation surface
R-7 SM	0.123	Right	Low flow side channel
R-8 SM	5.960	Right	Constructed inundation surface
R-9 SM	0.173	Right	Low flow side channel
R-10 SM	3.932	Left	Constructed inundation surface
U-3 SM	1.417	Left	Stockpile location
C-1 SM	1.709	Right	Staging area
C-2 SM	0.487	Right	Staging area
C-3 SM	0.163	Right	Staging area
C-4 SM	0.665	Right	Staging area
C-6 SM	0.446	Right	Access road - existing
C-5 SM	0.332	Left	Access road - new
C-7 SM	0.186	Left	Access road – new Staging area,
C-8 SM	0.216	Right	Access road - new
C-9 SM	0.012	Right	Access road - new
C-10 SM	0.108	Right	Access road - new
C-11 SM	0.009	Right	Access road - new
C-12 SM	0.105	Left	Access road - new
C-13 SM	5.920	Left	Staging area, gravel processing
X-1 SM	0.041	Right	Crossing
X-2 SM	0.018	Right	Crossing
X-3 SM	0.015	Right	Crossing
X-4 SM	0.006	Right	Crossing
X-5 SM	0.025	Right	Crossing
X-6 SM	0.014	Right	Crossing
Upper Rush Creek Site (92.27 Acres within the Site Boundary)			
R-5 UR	3.674	Left	Berm removal
R-4 UR	2.031	Right	Side channel enhancement
IC-1 UR	0.391	Right	LWD placement

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
IC-2 UR	1.230	Right	LWD placement
U-2 UR	0.396	Right	Stockpile location
R-3 UR	0.263	Right	Recontouring/Fill in Pool
R-1 UR	1.439	Right	Side channel enhancement
R-2 UR	1.140	Right	Recontouring
IC-3 UR	0.364	Left	Course sediment addition
U-1 UR	1.293	Right	Stockpile area
U-4 UR	0.606	Left	Stockpile location
U-3 UR	0.810	Left	Stockpile location
IC-4 UR	0.364	Left	Course sediment addition
C-1 UR	0.354	Left	Access road - existing
C-2 UR	0.021	Left	Access road - new
C-3 UR	0.011	Left	Access road - new
C-4 UR	0.206	Right	Access road - existing
C-5 UR	0.399	Right	Access road - existing
C-14 UR	0.017	Right	Access road - new
C-6 UR	0.347	Right	Access road - existing
C-7 UR	0.033	Right	Access road - new
C-8 UR	0.115	Right	Access road - new
C-15 UR	0.101	Right	Access road - new
C-9 UR	0.152	Right	Staging area
C-10 UR	0.521	Right	Staging area
C-13 UR	0.032	Left	Access road - new
C-11 UR	0.190	Right	Staging area
C-12 UR	0.178	Left	Access road - existing
C-17 UR	0.220	Right	Access road - existing
X-1 UR	0.019	Left	Crossing
C-16 UR	1.169	Left	Staging area
Lowden Ranch Site (211.77 Acres within the Site Boundary)			
R-4 LR	4.558	Left	Constructed inundation surface
IC-1 LR	0.257	Right	Course sediment addition
IC-5 LR	0.559	Left	Course sediment addition

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
IC-4 LR	0.946	Left	Course sediment addition
R-2 LR	8.034	Right	Constructed inundation surface and vegetation removal
IC-2 LR	0.206	Right	Course sediment addition
IC-3 LR	0.329	Right	Course sediment addition
IC-6 LR	0.526	Right	Course sediment addition
U-1 LR	3.566	Right	Course sediment stockpile
U-2 LR	5.990	Right	Stockpile location
U-3 LR	1.086	Right	Course sediment stockpile
R-3 LR	13.812	Right	Vegetation removal and constructed wetland
R-1 LR	5.591	Right	Side channel and constructed wetland
U-4 LR	56.946	Right	Revegetation area
C-1 LR	3.221	Right	Staging area, gravel processing
C-2 LR	0.718	Right	Access road - new
C-3 LR	0.185	Left	Access road - existing
C-4 LR	0.155	Right	Access road - new
X-1 LR	0.032	Left	Crossing
C-6 LR	0.482	Right	Access road - existing
C-5 LR	0.489	Right	Access road - existing
X-2 LR	0.019	Right	Crossing
C-7 LR	3.150	Left	Staging area, gravel stock piling
C-8 LR	0.403	Right	Access road - existing
Trinity House Gulch Site (43.69 Acres within the Site Boundary)			
U-3 THG	0.974	Left	Stockpile location
IC-2 THG	0.337	Left	Course sediment addition
IC-1 THG	0.374	Right	Course sediment addition
IC-3 THG	0.123	Left	Existing gulch
R-1 THG	1.316	Left	Side channel
R-2 THG	3.503	Left	Constructed inundation surface
R-3 THG	1.253	Left	Constructed inundation surface
U-2 THG	1.789	Left	Stockpile location

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
C-1 THG	0.274	Right	Access road - existing
C-2 THG	0.230	Left	Access road - new
X-1 TH	0.044	Left	Crossing
C-4 THG	0.034	Left	Access road - new
C-5 THG	0.025	Left	Access road - new
C-7 THG	0.155	Left	Access road - new
X-2 THG	0.015	Left	Crossing
U-1 THG	3.732	Left	Stockpile location
C-6 THG	1.002	Left	Staging area/access road - new
Steel Bridge Day Use Site (22.47 Acres within the Site Boundary)			
IC-1 SB	0.242	Right	Course sediment addition
U-1 SB	0.282	Right	Stockpile location
R-2 SB	1.800	Right	Constructed inundation surface
IC-2 SB	0.334	Right	Course sediment addition
IC-3 SB	0.146	Right	Course sediment addition
R-1 SB	0.868	Right	Constructed inundation surface
C-1 SB	0.246	Right	Access road - new
C-2 SB	0.431	Right	Staging area
C-3 SB	0.236	Right	Staging area
C-4 SB	0.811	Right	Access road - existing
C-5 SB	0.812	Right	Staging area
Reading Creek Site (135.87 Acres within the Site Boundary)			
U-4 RC	2.152	Left	Stockpile location
U-3 RC	5.136	Right	Stockpile location
U-2 RC	0.657	Right	Stockpile location
U-1 RC	1.281	Left	Stockpile location
IC1-RC	0.241	Left	Course sediment addition
IC2-RC	0.324	Left	Course sediment addition
IC3-RC	0.300	Right	Course sediment addition
IC4-RC	0.328	Right	Course sediment addition
IC5-RC	0.340	Right	Course sediment addition
R1-RC	2.571	Left	Constructed inundation surface

Table 2-2. Remaining Phase 1 Sites - Activity Areas

Activity Area	Size (acres)[a]	River Right/Left	Primary Use
R4-RC	4.323	Right	Constructed inundation surface
R2-RC	3.692	Right	High flow scour channel
R3-RC	0.273	Right	Constructed inundation surface
R5-RC	4.579	Left	Constructed inundation surface
C-1 RC	1.111	Right	Access road - existing
C-2 RC	0.031	Right	Access road - new
C-3 RC	0.137	Right	Access road - new
C-4 RC	0.400	Left	Access road - existing
C-5 RC	0.033	Left	Access road - new
X-1 RC	0.033	Right	Crossing
C-6 RC	0.786	Left	Staging area
C-7 RC	0.255	Right	Staging area
C-8 RC	0.342	Right	Staging area
C-9 RC	0.397	Left	Staging area
C-10 RC	0.416	Right	Staging area, Gravel processing
C-11 RC	0.102	Right	Access road - new
C-12 RC	0.853	Right	Access road - existing
C-13 RC	1.110	Right	Access road - existing
C-14 RC	0.431	Left	Access road - existing
C-15 RC	0.077	Left	Access road - new

[a] Area calculated from project GIS

2.4.2 Phase 2 Sites

Activities proposed for these sites are similar to those proposed for the Remaining Phase 1 sites; because designs are conceptual for the Phase 2 sites, however, this document provides a programmatic description of the activities that may be conducted. The location and conceptual actions for each of the Phase 2 sites are described below. The Phase 2 sites are labeled using an alpha code consistent with those used for the Remaining Phase 1 sites. The locations of the Phase 2 sites are shown on Figure 1-2.

Lower Rush Creek (LRC)

Located between RM 107.0 and 107.9, this site is bounded upstream by the Phase 1 Lewiston-Dark Gulch site. The upstream portion of the LRC site is responding rapidly under post-ROD flows and, for the most part, appears to be functional with respect to both fluvial processes and habitat. Conceptually, the objective is to enhance connectivity by improving the quality and quantity of side-channel habitat within

this segment. A constructed side-channel in the vicinity of the new Salt Flat Bridge could be enhanced, and there are opportunities to increase the alluvial features (bars) near the bridge abutments.

Tom Lang Gulch (TLG)

Located between RM 103.1 and 103.9, this site extends from a community boat launch on upstream river left to part way through the Poker Bar residential development on lower river right. Conceptually, the objective is to remove encroaching riparian vegetation, stabilize ongoing bank erosion throughout the segment, and enhance the alluvial nature of the site with sediment management activities.

Poker Bar (PB)

Located between RM 101.7 and 102.9, this site extends from the upstream tip of an island associated with the bridges spanning the split channel at Poker Bar, through the Poker Bar area, to a mid-channel island. The mid-channel island is located downstream of the outlet of a potential side channel on the right bank. Conceptually, the objective is to increase rearing habitat for native juvenile salmonids by enhancing the function of the low-flow side-channel.

China Gulch (CG)

Located between RM 101.0 and 101.6, this site includes the left bank side of a sharp left bend in the river at the downstream end of the Poker Bar residential area. The site is functioning fairly well and includes some alcoves and bars. Conceptually, the objective is to remove riparian berms and enhance the alluvial nature of the site using sediment management activities.

Limekiln Gulch (LKG)

Located between RM 99.6 and 100.4, this site was selected because it is potentially the upstream-most point of feasible access between Steel Bridge Road and Lower Poker Bar Road. Conceptually, the objective is to remove riparian berms, construct alcoves, and enhance the performance of the existing constructed side channels.

McIntyre Gulch (MG)

Located between RM 97.2 and 98.0, this site is just downstream of the Steel Bridge Day Use Area along Steel Bridge Road and extends upstream and downstream of the Bigger's Road Bridge. Conceptually, the objective is to remove riparian berms and enhance the alluvial nature of the site using sediment management activities.

Douglas City (DCY)

Located between RM 93.5 and 94.0, this site extends from the SR 299 bridge at Douglas City for approximately 0.5 mile downstream. This reach lacks complexity and is confined on the left bank, with a floodplain on the right bank. Conceptually, the objective is to enhance the alluvial nature of the site by creating point bars and expanding the floodplain feature to increase channel sinuosity and complexity.

Site Boundary (103.421 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:3,600

300 0 300

Feet

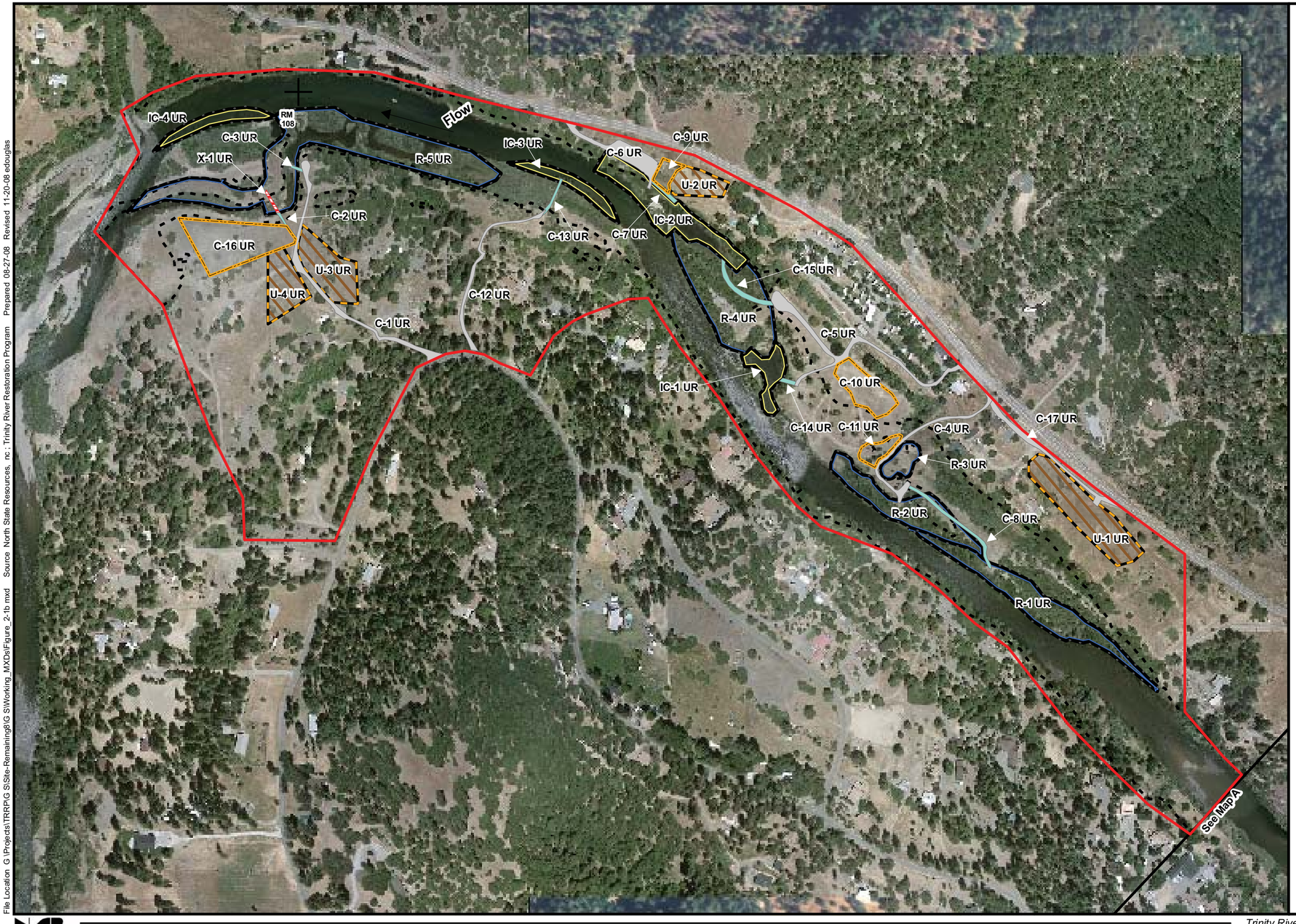
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-1a.mxd Source North State Resources, inc.; Trinity River Restoration Program Prepared 08-27-08 Revised 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1a
Sawmill - Proposed Project



Site Boundary (92.274 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:4,200

350 0 350
Feet

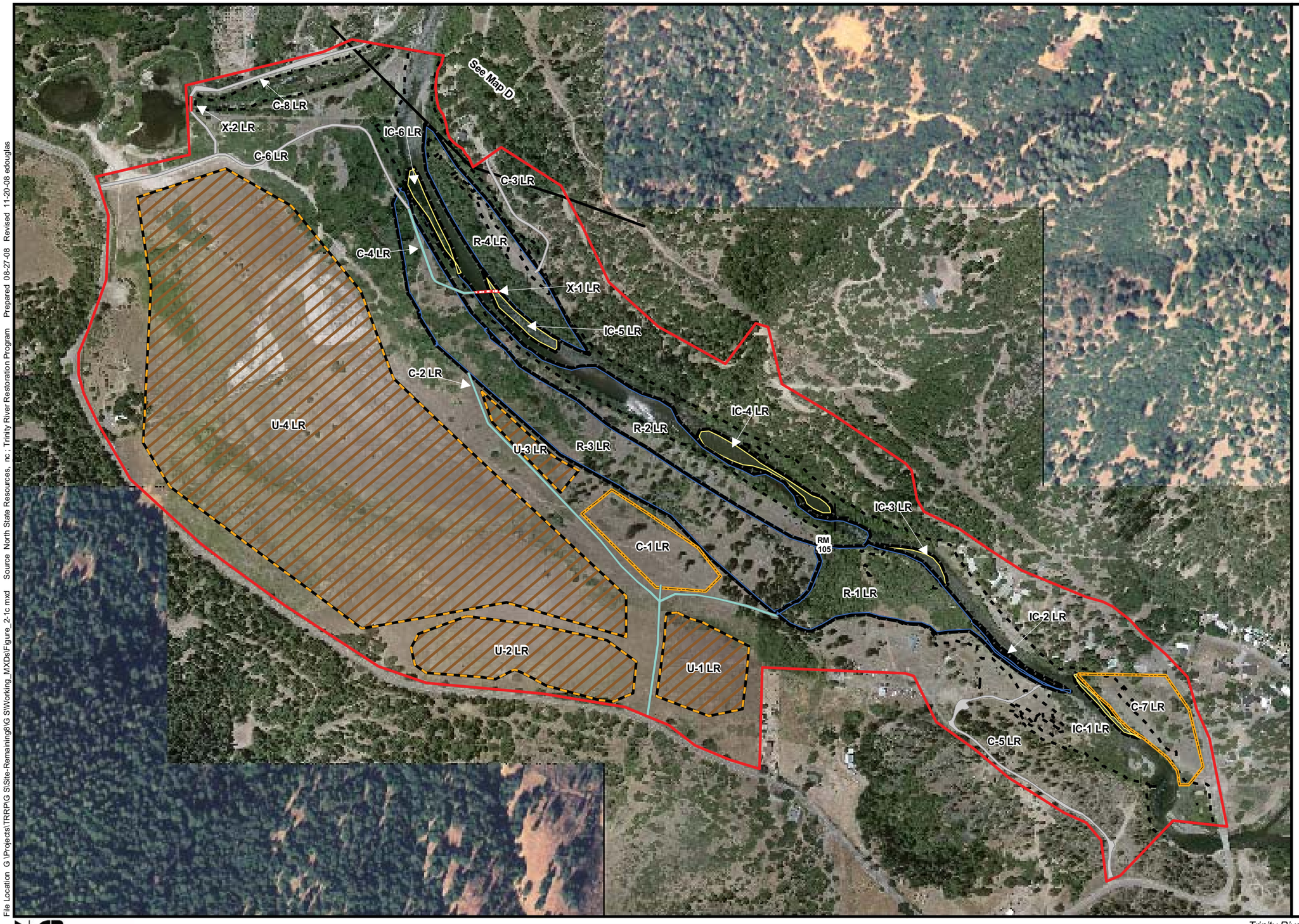
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining\GIS\Working_MXDs\Figure_2-1b.mxd Source North State Resources, inc.; Trinity River Restoration Program Prepared 08-27-08 Revised 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1b
Upper Rush Creek - Proposed Project



Site Boundary (211.769 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:5,400

450 0 450
Feet

Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-1c.mxd Source North State Resources, inc.; Trinity River Restoration Program Prepared 08-27-08 Revised 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1c
Lowden Ranch - Proposed Project

Site Boundary (43.695 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:3,000

250 0 250

Feet

Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location: G:\Projects\TRRP\G S\Site-Remaining\GIS Working_MXDs\Figure_2-1d.mxd Source: North State Resources, Inc.; Trinity River Restoration Program Prepared: 08-27-08 Revised: 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1d
Trinity House Gulch - Proposed Project

Site Boundary (22.475 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:2,400

200 0 200
Feet

Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-1e.mxd Source North State Resources, Inc.; Trinity River Restoration Program Prepared 08-27-08 Revised 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1e
Steel Bridge Day Use - Proposed Project

Site Boundary (135.871 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:4,200

350 0 350

Feet

Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining\GIS\Working_MXDs\Figure_2-1f.mxd Source North State Resources, Inc.; Trinity River Restoration Program Prepared 08-27-08 Revised 11-20-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-1f
Reading Creek - Proposed Project

Steiner Flat Feather Edge (SFF)

Located between RM 91.8 and 92.2, this site includes the old Steiner Flat feathered edge restoration site and extends downstream 1,800 feet. The site is functioning fairly well but includes significant tailings on the floodplain and some small riparian berms. Conceptually, the objective is to remove and process the tailings, lower the floodplain, remove berms, and enhance complexity using LWD or boulders.

Steiner Flat Campground (SFC)

Located between RM 91.4 and 91.8, this site includes all of a confined, sharp (almost 180-degree) river bend. There are extensive bedrock outcrops throughout the site. Conceptually, the objective is to reduce riparian encroachment and enhance existing floodplain and side-channel features.

Lower Steiner Flat (LSF)

Located between RM 91.2 and 90.2, this site includes two wide, sweeping right bends of the river, with a small inflection area between. Extensive bedrock at the site limits the alluvial potential. Conceptually, the objective is to reduce riparian encroachment and enhance existing floodplain features.

Lorenz Gulch (LZG)

Located between RM 89.4 and 90.1, this site extends along a high terrace of what appear to be flattened tailings on the left bank, ending where a broad floodplain begins on the left bank at Steiner Flat. Conceptually, the objective is to reduce riparian encroachment and enhance existing floodplain features.

Dutch Creek (DCK)

Located between RM 85.1 and 86.6, this site begins where Dutch Creek enters the Trinity River (across from Johnson Point) and extends to Evan's Bar. There are berms on the right and left banks, especially the upstream left and middle right banks. Conceptually, the objective is to reduce riparian encroachment and enhance existing floodplain features.

Evan's Bar (EB)

Located between RM 84.4 and 85.1, this site is located in the vicinity (upstream and downstream) of the current CDFG fish-counting weir near Junction City, and includes the old Bell Gulch Rehabilitation Site. There are berms on both banks and a high, flattened tailings terrace on the left bank. The reach is relatively linear and simple. Conceptually, the objective is to reduce riparian encroachment, enhance existing floodplain and side-channel features, and establish alternating point bars.

Soldier Creek (SCK)

Located between RM 83.6 and 84.2, this site is just upstream of Chapman Ranch. There is a berm on the left bank, and a steep slope confines the right bank. Conceptually, the objective is to reduce riparian encroachment and enhance existing floodplain features.

Chapman Ranch (CR)

Located between RM 82.9 and 83.6, this site is a relatively straight and simple reach about 4,000 feet long that is showing signs of meander development. The channel is naturally confined within terraces, with significant tailings along the banks and on the terrace. The natural terrace and floodplain locations and elevations at the site are unclear; what appears to be the pre-dam channel location and terrace locations in recent aerial photos may represent artifacts of very extensive dredging operations that altered the site well before dam construction. Conceptually, the objective is to reduce riparian encroachment, enhance existing floodplain and side-channel features, and establish alternating point bars.

Deep Gulch (DG)

Located between RM 82.4 and 82.9, this site is just downstream of the UCR site. A steep hillslope adjacent to the left bank confines this site while the right bank is bordered by various alluvial features. Conceptually, the objective is to reduce riparian encroachment, enhance existing floodplain and side-channel features, and establish alternating point bars.

Sheridan Creek (SHC)

Located between RM 81.6 and 82.4, this site is located upstream of Sheridan Creek and includes the old Deep Gulch feathered-edge project on the left bank and the old Sheridan Creek feathered edge work area on the downstream right bank. The site also includes the old constructed Svensson side-channel that has almost completely filled in with sand and silt since construction. This reach is relatively straight and has a plane bed channel. Conceptually, the objective is to reduce riparian encroachment, enhance the existing floodplain, and augment alternating point bars.

Oregon Gulch (OG)

Located between RM 80.9 and 81.6, this site is located upstream and downstream from a sharp left bend in the river near the location where Oregon Gulch enters the Trinity River on the right bank. The site is evolving, with multiple channels present at the bend. The upper right bank of the site is bounded and confined by massive, high tailings piles. Conceptually, the objective is to remove the berm, develop point bars, construct a side-channel, and reclaim dredge tailing deposits.

Sky Ranch (SR)

Located between RM 80.3 and 80.9, this site is located near the junction of SR 299 and Sky Ranch Road. The site is mostly bounded by a naturally high terrace/valley wall on the left bank. The right bank includes riparian berms and is bounded by a massive terrace of flattened tailings. A large pile of LWD has been deposited near the channel on the upstream right bank, and there are several low-flow side channels. Conceptually, the objective is to reduce riparian encroachment, develop point bars, enhance existing side-channels, and reclaim dredge tailing deposits.

Upper Junction City (UJC)

Located between RM 79.8 and 80.5, this site extends upstream 0.5 mile from the Dutch Creek Road Bridge in Junction City. There are extensive tailings within the site boundaries, including high piles

confining the river between RM 79.9 and 80.5. Conceptually, the objectives are to reduce riparian encroachment and lower the alluvial surfaces in order to increase the area inundated at flows below the 1.5-year recurrence interval. Additionally, this site provides opportunities to reclaim dredge tailing deposits.

Lower Junction City (LJC)

Located between RM 79.3 and 79.8, this site extends downstream 0.5 mile from the Dutch Creek Road Bridge in Junction City through the "Junction City Hole," a large scour hole induced by a bedrock outcrop that provides significant adult salmonid holding habitat. There is a high berm on part of the right bank at this site. Conceptually, the objectives are to reduce riparian encroachment and lower the alluvial surfaces in order to increase the area inundated at flows below the 1.5-year recurrence interval. Additionally, this site provides opportunities to reclaim dredge tailing deposits.

Upper Conner Creek (UCC)

Located between RM 77.4 and 78.3, this site is immediately upstream of the Conner Creek project constructed in 2006. Conceptually, the objective is to remove the berm at the site, develop point bars, enhance existing side channels, and reclaim dredge tailing deposits.

Wheel Gulch (WGH)

Located between RM 75.8 and 76.4, this site is just upstream of the Valdor Gulch project constructed in 2006. An existing side channel connects with the river at RM 75.9 and is evident on historical photos. Some portions of the channel have been affected by sedimentation, but it still provides some function during higher flows. This site also encompasses a sediment retention basin constructed by Caltrans between SR 299 and the Trinity River. Conceptually, the objective is to increase the connectivity between Wheel Gulch and the floodplain of the Trinity River, enhance the side channel, remove berms, and enhance the existing floodplain. Reclamation of dredge tailings could also occur at this site.

2.5 Description of Alternatives

CEQA Guidelines Section 15126.6(a) states that the EIR shall describe a range of reasonable alternatives to the proposed project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen significant effects in comparison to the proposed project. In addition, CEQA requires the discussion of a "no project" alternative. Section 15126.6(c) states that among the factors which may be taken into account when addressing the feasibility of alternatives are site availability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site.

A number of factors drove the selection of potentially feasible alternatives, which will ultimately lead to a preferred alternative. Section 2.7 provides a brief description of alternatives considered but eliminated from further evaluation.

The following criteria were applied to evaluate the ability of the Proposed Project (NEPA Proposed Action) to meet the objectives outlined in section 2.2. Pursuant to NEPA, the purpose and need (presented in Chapter 6) were also considered in this evaluation:

- Effectiveness – The methods, materials, and performance of previous Trinity River restoration projects (including the original pilot projects constructed in the 1990s and the recent TRRP channel rehabilitation projects) in similar environments that have documented long-term successful performance under similar circumstances were considered (e.g., Hocker Flat, Canyon Creek, and Indian Creek rehabilitation projects).

- Implementation – Practical execution, including potential public acceptance issues, permitting issues, and land use issues, was considered. Constructability and the complexity of maintaining the rehabilitation sites over time were also considered.

- Environmental – Benefits and impacts to environmental resources with emphasis on special-status species, including native anadromous salmonids, and humans were considered. The impacts considered included both short-term construction-related impacts and long-term maintenance impacts associated with post-ROD TRD flow releases. Aquatic habitat, jurisdictional wetlands, accessibility, and consistency with land use planning were considered in the type and location of proposed activities.

- Cost – The relative cost of each alternative, including construction and revegetation costs, was considered. Cost was used to identify alternatives that were significantly out of proportion with other alternatives.

An interdisciplinary team, including representatives from the TMC, initially evaluated a number of alternatives using the criteria outlined above. This resulted in identifying three alternatives: the No-Project Alternative (NEPA No-Action), the Proposed Project, and Alternative 1 for analysis in the document. Alternatives were formulated from public input, engineering feasibility, scientific information, and professional judgment, in a manner consistent with NEPA and CEQA. A summary of the fully analyzed alternatives is presented in the following sections. The anticipated impacts, including those required for CEQA and NEPA, are analyzed in subsequent chapters of this document.

The initial screening process considered alternatives that met the requirements discussed in section 2.2 and section 6.2 of this document. These considerations included flow regimes (seasonal and inter-annual), the potential for resource impacts, and engineering limitations. The preliminary list of alternatives incorporated input provided during meetings with various landowners, interested agencies and tribes, and culminated with input received during the NEPA/CEQA scoping process.

This section describes the No-Project Alternative, the Proposed Project, and Alternative 1. The Proposed Project most efficiently meets the project objectives (section 2.2) and purpose and need (section 6.2) established by the respective CEQA and NEPA lead agencies. A large number of private parcels fall within the boundaries established for the sites described in this document. Alternative 1 was developed in response to input provided by stakeholders, including landowners along the river corridor, during the

scoping process. Alternative 1 is considered feasible and represents an approach that could reduce temporary impacts to some resources such as wetland and riparian habitat, noise, air quality, and traffic/transportation, particularly where sites are near residential and/or recreational areas. To varying degrees, Alternative 1 also reduces construction and sediment management activities in the proximity of private landowners. The alternatives assessed in this document represent a reasonable range that will provide for meaningful public participation and informed decision-making.

Conditions existing at the time the NOP was published are used to establish the environmental baseline for CEQA purposes (CEQA Guidelines Section 15126.6(e)(1)). Throughout the remainder of this document, this baseline will provide the basis for determining whether the Proposed Project's environmental impacts are likely to be significant.

2.5.1 No-Project Alternative

The No-Project Alternative represents ongoing activities and operations of the TRRP and other entities involved in restoring the Trinity River. Consistent with CEQA Guidelines, Section 15126.6, subdivision (e)(2), existing conditions are defined as conditions that "would be reasonably expected to occur in the foreseeable future if the project were not approved" (Association of Environmental Professionals 2009). This is consistent with the NEPA definition of the No-Action Alternative involving federal decisions (42 USC 4321–4347). The No-Project Alternative represents conditions under a scenario where no additional TRRP activities would occur at Phase 1 or Phase 2 mechanical channel rehabilitation sites. This alternative would also preclude implementation of sediment management activities downstream of the Sawmill long-term high-flow gravel augmentation site. The No-Project Alternative encompasses TRRP activities authorized previously. Collectively, actions and activities authorized in the ROD and incorporated into the No-Project Alternative include:

- implementation of the annual flow release schedule based on recommendations of the TMC to the Director of Reclamation's Mid-Pacific Region and the Director of the USFWS, Region Eight; and

- implementation of watershed restoration and rehabilitation projects within the Trinity River basin, including those funded by the TRRP and members of the TMC, BLM, and the TCRCD.

In addition, the following ROD components are authorized by lead agencies (e.g., USACE, Regional Water Board, CDFG, Trinity County) at certain locations and for a limited time duration (through 2012). These authorized activities include:

- coarse sediment augmentation at activity areas within the Lewiston-Dark Gulch rehabilitation site; and

- channel rehabilitation project refinements (e.g., planting) that may take place at all recently completed TRRP channel rehabilitation sites (Hocker Flat, Canyon Creek, Indian Creek, and Lewiston–Dark Gulch).

2.5.2 Proposed Project

The Proposed Project includes specific activities proposed at 158 activity areas within the boundaries of the Remaining Phase 1 sites: SM, URC, LR, THG, SB, and RC. The activities proposed for the Phase 2 sites are similar to those proposed for the Remaining Phase 1 sites; however, because only broad restoration concepts have been developed for the Phase 2 sites, the Proposed Project provides a programmatic description of the Phase 2 site activities that respond to the conceptual objectives for these sites.

The Proposed Project includes activities similar to those implemented at previous channel rehabilitation sites. These activities include reducing riparian encroachment at select locations, physical alteration of other types of alluvial features (e.g., floodplains, mid-channel bars, and side channels), and removal of riparian vegetation at strategic locations to create fish habitat and promote the alluvial processes necessary for the restoration and maintenance of alternate bar riverine habitats.

In addition to the activities listed in Table 2-1, the Proposed Project includes activities intended to implement the TRRP's Sediment Management Plan. These sediment management activities would occur primarily upstream of Weaver Creek, but could be included as design elements (e.g., placement of coarse sediment as point bars) within Phase 2 site boundaries as required to increase aquatic habitat complexity (Figure 1-2). Sediment management activities include:

- placement of select sediment at in-channel, riverine, and upland activity areas in conjunction with mechanical channel activities to meet aquatic and terrestrial wildlife habitat objectives;
- long-term injection of select sediment at strategic locations (illustrated on Figure 1-2) upstream of Weaver Creek during high-flow events; and
- ongoing removal and disposal of fine sediment captured at the Hamilton Pond retention facility.

The TRRP has developed a number of programmatic objectives for channel rehabilitation projects. As described previously, these objectives were used by the project design team to identify specific activities that could be applied at the Remaining Phase 1 and Phase 2 sites. For the Remaining Phase 1 sites, each activity area was established to meet a suite of specific objectives in conformance with the aforementioned programmatic objectives. Ultimately, the goal of the activities described in this document is to increase the quantity and enhance the quality of suitable rearing habitat for native anadromous salmonids and other native fish species, while reestablishing geomorphic processes required to enhance alluvial features (alternate point bars) in the Trinity River.

Remaining Phase 1 Sites

The TRRP has identified 15 discrete activities that are incorporated into the Proposed Project. One or more of these activities are proposed for each of the activity areas within the Remaining Phase 1 sites. The discussion of Phase 2 activities is programmatic at this point in the CEQA planning process.

Figures 2-1a through 2-1f illustrate activity areas and construction areas for each of the Remaining Phase 1 sites. The Proposed Project includes a number of in-channel activities at each of the Remaining Phase 1 sites, as well as at least one temporary river crossing at most of these sites. Excavation activities associated with the Remaining Phase 1 sites are expected to yield more than 400,000 cubic yards of alluvial material. Collectively, the sites have the capacity to place (dispose of) nearly 500,000 cubic yards of excavated material. Table 2-3 shows the activity areas, the estimated volume of material that would be excavated from each activity area, the miles of road needed to support project activities, and the types of activities proposed.

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
		Sawmill Site		
IC-1 SM	0.064	400	0.000	H, I
IC-2 SM	0.163	600	0.000	H, I
IC-3 SM	0.413	2,000	0.000	H, I
IC-4 SM	0.819	1,000	0.000	H, I
IC-5 SM	0.216	1,000	0.000	I
IC-6 SM	0.205	700	0.000	I
IC-7 SM	0.219	1,400	0.000	I
IC-8 SM	0.230	1,500	0.000	I
IC-9 SM	0.298	1,400	0.000	I
IC-10 SM	0.347	2,200	0.000	I
IC-11 SM	0.282	1,400	0.000	I
IC Subtotal	**3.256**	**13,600**	**0.000**	
R-1 SM	0.447	2,900	0.000	A, D, K, O
R-2 SM	3.878	26,000	0.000	A, C, D, K, O
R-3 SM	0.053	500	0.000	A, E, D, O
R-4 SM	0.241	5,900	0.000	A, E, H, O
R-5 SM	0.096	300	0.000	A, H
R-6 SM	0.207	700	0.000	A, D, O
R-7 SM	0.123	400	0.000	A, C, E, H
R-8 SM	5.960	82,300	0.000	A, C, D, K, O
R-9 SM	0.173	600	0.000	A, C, E, H
R-10 SM	3.932	36,900	0.000	A, D, J, K, O
R Subtotal	**15.111**	**156,500**	**0.000**	

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
U-1 SM	0.833	20,200	0.000	A, J, K, O
U-2 SM	1.384	33,500	0.000	A, J, K, O
U-3 SM	1.417	60,000	0.000	A, J, K, O
U Subtotal	**3.634**	**113,700**	**0.000**	
C-1 SM	1.709	0	0.000	K, O
C-2 SM	0.487	0	0.000	K, O
C-3 SM	0.163	0	0.000	K, O
C-4 SM	0.665	0	0.000	K, M, O
C-5 SM	0.332	0	0.000	M, O
C-6 SM	0.446	0	0.222	L, O
C-7 SM	0.186	0	0.298	M, O
C-8 SM	0.216	0	0.126	M, O
C-9 SM	0.012	0	0.125	M, O
C-10 SM	0.108	0	0.000	M, O
C-11 SM	0.009	0	0.066	M, O
C-12 SM	0.105	0	0.003	M, O
C-13 SM	5.920	0	0.080	A, J, K, O
C Subtotal	**10.360**	**0**	**0.920**	
X-1 SM	0.041	0	0.005	X
X-2 SM	0.018	0	0.006	X
X-3 SM	0.015	0	0.005	X
X-4 SM	0.006	0	0.005	X
X-5 SM	0.025	0	0.017	X
X-6 SM	0.014	0	0.001	X
X Subtotal	**0.118**	**0**	**0.039**	
SM Total	**32.479**	**283,800**	**0.959**	
		Upper Rush Creek Site		
IC-1 UR	0.391	0	0.000	I, A, G, O
IC-2 UR	1.230	0	0.000	I, A, G, O

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
IC-3 UR	0.364	2,000	0.000	I
IC-4 UR	0.364	2,000	0.000	I
IC Subtotal	**2.348**	**4,000**	**0.000**	
R-1 UR	1.439	1,155	0.000	A, C, E, O
R-2 UR	1.140	2,100	0.000	A, B, D, E, O
R-3 UR	0.263	545	0.000	A, J, O
R-4 UR	2.031	6,500	0.000	A, D, E, O
R-5 UR	3.674	7,700	0.000	A, E, H, K
R Subtotal	**8.548**	**18,000**	**0.000**	
U-1 UR	1.293	7,500	0.000	A, J, O
U-2 UR	0.396	2,500	0.000	A, J, O
U-3 UR	0.810	2,500	0.000	A, J, O
U-4 UR	0.606	1,500	0.000	A, J, O
U Subtotal	**3.105**	**14,000**	**0.000**	
C-1 UR	0.354	0	0.190	L, O
C-2 UR	0.021	0	0.016	M, O
C-3 UR	0.011	0	0.001	M, O
C-4 UR	0.206	0	0.140	L, O
C-5 UR	0.399	0	0.194	L, O
C-6 UR	0.347	0	0.076	A, L, K, O
C-7 UR	0.033	0	0.015	M, O
C-8 UR	0.115	0	0.081	M, O
C-9 UR	0.152	0	0.000	K, O
C-10 UR	0.521	0	0.000	A, K, O
C-11 UR	0.190	0	0.000	A, K, O
C-12 UR	0.178	0	0.135	L, O
C-13 UR	0.032	0	0.022	M, O
C-14 UR	0.017	0	0.005	M, O
C-15 UR	0.101	0	0.050	M, O

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-16 UR	1.169	0	0.000	A, J, O
C-17 UR	0.220	0	0.112	L, O
C Subtotal	**4.068**	**0**	**1.037**	
X-1 UR	0.019	0	0.012	X
X Subtotal	**0.019**	**0**	**0.012**	
UR Total	**18.087**	**36,000**	**1.049**	
		Lowden Ranch Site		
IC-1 LR	0.257	3,200	0.000	I
IC-2 LR	0.206	1,700	0.000	I
IC-3 LR	0.329	3,500	0.000	I
IC-4 LR	0.946	10,270	0.000	I
IC-5 LR	0.559	3,500	0.000	I
IC-6 LR	0.526	3,200	0.000	I
IC Subtotal	**2.822**	**25,370**	**0.000**	
R-1 LR	5.591	24,500	0.000	A, B, C, E, K, O
R-2 LR	8.034	52,300	0.000	A, B, E, K, O
R-3 LR	13.812	10,000	0.000	A, C, E, K, O
R-4 LR	4.558	6,500	0.000	A, D, K, G, O
R Subtotal	**31.995**	**93,300**	**0.000**	
U-1 LR	3.566	30,000	0.000	J, O
U-2 LR	5.990	60,000	0.000	A, J, O
U-3 LR	1.086	20,000	0.000	A, J, O
U-4 LR	56.946	0	0.000	A, J, O
U Subtotal	**67.589**	**110,000**	**0.000**	
C-1 LR	3.221	0	0.000	A, K, O
C-2 LR	0.718	0	0.474	M, O
C-3 LR	0.185	0	0.122	L, O
C-4 LR	0.155	0	0.099	L, O
C-5 LR	0.489	0	0.297	L, O
C-6 LR	0.482	0	0.322	L, O

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-7 LR	3.150	0	0.000	A, K, O
C-8 LR	0.403	0	0.224	L, O
C Subtotal	**8.802**	**0**	**1.537**	
X-1 LR	0.032	0	0.014	X
X-2 LR	0.019	0	0.013	X
Subtotal X	**0.051**	**0**	**0.027**	
LR Total	**111.260**	**228,670**	**1.565**	
		Trinity House Gulch Site		
IC-1 THG	0.374	1,500	0.000	I
IC-2 THG	0.337	1,600	0.000	I
IC-3 THG	0.123	600	0.000	I, A, B, E, G
IC Subtotal	**0.833**	**3,700**	**0.000**	
R-1 THG	1.316	8,500	0.000	A, E, K, O
R-2 THG	3.503	33,900	0.000	A, B, C, D, E, K, O
R-3 THG	1.253	12,000	0.000	A, B, C, D, E, K, O
Subtotal R (6.073)	**6.073**	**54,400**	**0.000**	**A, E, K, O**
U-1 THG	3.732	34,000	0.000	A, J, K, O
U-2 THG	1.789	10,000	0.000	A, J, O
U-3 THG	0.974	6,700	0.000	A, J, O
Subtotal U	**6.495**	**50,700**	**0.000**	
C-1 THG	0.274	0	0.188	L, O
C-2 THG	0.230	0	0.130	M, O
C-4 THG	0.034	0	0.010	M, O
C-5 THG	0.025	0	0.008	M, O
C-6 THG	1.002	0	0.000	A, K, M, O
C-7 THG	0.155	0	0.083	L, O
Subtotal C	**1.720**	**0**	**0.445**	

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
X-1 THG	0.044	0	0.019	X
X-2 THG	0.015	0	0.005	X
Subtotal X	**0.059**	**0**	**0.025**	
THG Total	**15.180**	**108,800**	**0.470**	
		Steel Bridge Day Use Site		
IC-1 SB	0.242	1,000	0.000	I
IC-2 SB	0.334	1,500	0.000	I
IC-3 SB	0.146	1,000	0.000	I
Subtotal IC	**0.722**	**3,500**	**0.000**	
R-1 SB	0.868	2,000	0.000	A, B, E, O
R-2 SB	1.800	1,000	0.000	A, C, E, K, O
Subtotal R	**2.668**	**3,000**	**0.000**	
U-1 SB	0.282	1,500	0.000	A, K, O
Subtotal U	**0.282**	**1,500**	**0.000**	
C-1 SB	0.246	0	0.149	A, M, O
C-2 SB	0.431	0	0.000	A, K, O
C-3 SB	0.236	0	0.000	A, K, O
C-4 SB	0.811	0	0.339	L, O
C-5 SB	0.812	0	0.000	A, J, K, O
Subtotal C	**2.535**	**N/A**	**0.487**	
SM Total	**6.208**	**8,000**	**0.487**	
		Reading Creek Site		
IC1-RC	0.241	1,600	0.000	I
IC2-RC	0.324	2,100	0.000	I
IC3-RC	0.300	1,600	0.000	I
IC4-RC	0.328	2,100	0.000	I
IC5-RC	0.340	2,200	0.000	I
Subtotal IC	**1.533**	**9,600**	**0.000**	
R1-RC	2.571	13,600	0.000	A, C, D, O
R2-RC	3.692	13,900	0.000	A, C, D, K, O
R3-RC	0.273	2,200	0.000	A, B, E, K, O

Table 2-3. Summary of Proposed Project – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
R4-RC	4.323	44,400	0.000	A, C, D, K, O
R5-RC	4.579	35,100	0.000	A, C, D, O
Subtotal R	**15.439**	**109,200**	**0.000**	
U-1 RC	1.281	15,600	0.000	A, J, K, O
U-2 RC	0.657	7,500	0.000	A, J, K, O
U-3 RC	5.136	64,400	0.000	A, J, K, O
U-4 RC	2.152	43,400	0.000	A, J, K, O
Subtotal U	**9.226**	**130,900**	**0.000**	
C-1 RC	1.111	0	0.642	L, O
C-2 RC	0.031	0	0.019	M, O
C-3 RC	0.137	0	0.088	M, O
C-4 RC	0.400	0	0.261	L, O
C-5 RC	0.033	0	0.014	M, O
C-6 RC	0.786	0	0.000	A, K, O
C-7 RC	0.255	0	0.000	A, K, O
C-8 RC	0.342	0	0.000	A, K, O
C-9 RC	0.397	0	0.000	A, K, O
C-10 RC	0.416	0	0.000	A, K, O
C-11 RC	0.102	0	0.066	M, O
C-12 RC	0.853	0	0.274	L, O
C-13 RC	1.110	0	0.461	L, O
C-14 RC	0.431	0	0.246	L, O
C-15 RC	0.077	0	0.034	A, M, O
Subtotal C	**6.481**	**N/A**	**2.105**	
X-1 RC	0.033	0	0.014	X
Subtotal X	**0.033**	**N/A**	**0.014**	
RC Total	**32.712**	**249,700**	**2.118**	

[a]Area calculated from project GIS
[b]Provided by TRRP

Riverine activities on both sides of the Trinity River would use adjacent upland and staging areas within the boundaries of the sites for disposing of and/or stockpiling excavated or processed materials.

Activities A through I are intended to increase the potential for the river to meander (migrate) within the floodplain in which it has been confined by historic dredging activities and, more recently, impacts related to the construction and operation of the TRD. In addition to the immediate changes to the channel (e.g., grade control removal, berm removal), the Proposed Project would increase the likelihood that the Trinity River would reflect more of the "healthy river" attributes of an alluvial river. A full discussion of the "healthy river" attributes is provided in section 4.3 of this document.

Activities E, F, and G are intended to create off-channel habitat that would provide refuge for salmonids and other aquatic wildlife during inundation. The side channels, alcoves, and floodplain enhancements would also provide additional complexity to the riverine environment and areas of riparian habitat diversity. All of these activities are consistent with the "healthy river" attributes.

Activities J through M are associated with the transfer, placement, and stabilization of material excavated from the riverine areas. In conjunction with Activity J, various grading techniques will be used to develop seasonal, off-channel riparian habitat available for western pond turtles and other riparian-dependent species. These features are proposed at the LR and RC sites (e.g., R-1 LR, R-3 LR, and U-3 RC). Activity K includes the processing and storage of coarse sediment at several of the Remaining Phase 1 sites (e.g., SM, LR). Five of the sites would require temporary stream crossings, including mainstem crossings at the LR, TRG, and RC sites. No temporary crossings would be required at the SB site. As stated previously, the type and actual location of the crossings could be adjusted based on site-specific conditions during the final design.

Monitoring is a required element of the Proposed Project and responds to the TRRP program management objectives, as well as the elements of the MMRP required pursuant to CEQA.

Design Elements

With some exceptions, the design elements discussed below are common to the Proposed Project and Alternative 1. The description of Alternative 1 includes a discussion of the specific design elements that differ from those for the Proposed Project.

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

Hydraulics

The Proposed Project would occur in areas that FEMA has designated as Special Hazard Zones AE and X, as described in section 4.4. 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 any action alternative 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 alternatives. 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 action alternatives requires comparing estimated seasonal base flows and estimated return-period flows. USACE's Hydraulic Engineering Center River Analysis System (HEC-RAS) hydraulic model will be used by the design team during final design activities to predict changes in flood elevations at various points along the project reach. Table 2-4 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 alternatives meet the flood constraints described above.

Table 2-4. Estimated Mainstem Trinity River Flow Conditions Used for Alternative Designs

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=return interval

A HEC-RAS model for the Trinity River from Lewiston Dam to the North Fork Trinity River was developed by 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 project 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 action alternatives. 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 portrayed in Table 2-4 as the "best available information" per FEMA requirements. The FEMA Q100 "near Douglas City" (38,500 cfs) was established in the 1976 USACE report (U.S. Army Corps of Engineers 1976) used by FEMA to develop the current flood insurance rate maps (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 action alternatives.

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 will ensure that constructed surfaces are self-draining in order to minimize potential fish stranding.

Roadway Approaches

The Remaining Phase 1 sites are accessible by vehicles from roads, parking areas, and private driveways. Primary roadways for each of the Remaining Phase 1 sites are described below. The SM site is accessed using Old Lewiston Road, Cemetery Road, Goose Ranch Road, and various private roads and driveways. Upper Rush Creek Road, Goose Ranch Road, and various private roads and driveways provide access to the Upper Rush Creek site. The LR and THG sites are accessed by Old Lewiston Road, Browns Mountain Road, and various private roads and driveways. The SB site is accessed using Steel Bridge Road. The RC site is accessed using SR-3, Steiner Flat Road, Douglas City Campground Road, and various private roads and driveways. Public roads that access these sites are managed by the BLM, Caltrans, or Trinity County. In addition to Trinity County, the BLM, DWR, and CDFG maintain river access points within the boundaries of these sites.

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, with up to 36 trucks per day hauling materials offsite, generally between August 1 and October 15. Depending on funding and timing of implementation, these trucks would be used for approximately 5 seasons of construction work. Traffic control measures would be applied in accordance with BLM, Trinity County, and Caltrans requirements.

Recreation Facilities

As appropriate, 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 BLM, DWR, and CDFG, could enhance one or more of these facilities consistent with project objectives. Examples of enhancement could be updated signage, surfacing of trails or parking areas with permeable materials, improvements to fishing access locations or establishment of interpretive features intended to increase public awareness of the ongoing efforts to restore the Trinity River.

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.

Rights-of-Way/Easements

Prior to construction, formal realty agreements would be made between Reclamation; land managers for BLM, DWR, and CDFG; 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.

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, particularly in the area surrounding the UR and SB sites to ensure that service would not be disrupted. Additional information on utilities is provided in section 4.15 and section 7.15.

Construction Criteria and Methods

Construction Process Overview

The following provides a general overview of the construction process for the action alternatives. A list of equipment that may be used is provided in section 4.14, Noise.

- 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 M) would be used to access the activity areas. New access roads (activity N) and haul routes would be constructed when necessary and restored to a stable condition in accordance with landowner requirements at the completion of the project.

- 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. The furrows developed by this ripping will ensure that most storm water runoff is retained and filtered on-site 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 will 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 September 15 as allowed by the coho salmon in-river work window in NMFS' 2000 Trinity River 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 at the end of the chapter). 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.

- Alcoves and side channels would be constructed from the existing grade down slope. Measures will be taken (e.g., sediment plug, sandbags) to isolate the work area from flowing water. If necessary, pumps will 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 will 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 will 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.

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.

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 will 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 recreation access to BLM, DWR, CDFG, and private recreation facilities within the boundaries of the Remaining Phase 1 sites will be provided in coordination with agencies and landowners. Once construction activities are complete, Reclamation, in consultation with these agencies and landowners, would ensure that these temporary access facilities are rehabilitated consistent with any land use agreements. Temporary access facilities may be closed to the public after the project is completed to prevent damage to private property and public resources.

- Temporary construction access may be required; access routes shall be of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

Staging Areas

Staging areas and storage facilities for the Proposed Project and Alternative 1 are shown on Figures 2-1a through 2-1f and 2-2a through 2-2f, respectively, and listed in Tables 2-3 and 2-6. 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.

Air Pollution and Dust Control

Efforts will 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 will 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 will also be required to provide recycling bins for on-site waste materials.

Contract documents will also specify that the contractor will be responsible for limiting dust by watering construction site areas used by trucks and vehicles. If water is taken from the river, pump intakes will be in conformance with criteria established by NMFS and CDFG 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.

Fire Protection and Prevention

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors will 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.

Water Pollution Prevention

Reclamation shall implement water pollution control measures that conform to applicable and appropriate permits. Reclamation will 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 shall be implemented by Reclamation are listed below:

- Every reasonable precaution will be exercised and BMPs will 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 will be cleaned of dirt and grease prior to any in-channel activities. All construction equipment will be inspected daily and maintained to ensure that fuel or lubricants do not contaminate the Trinity River. Spill containment kits will be onsite at all times and, where feasible, berms or other containment methods will 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 shall 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.

- Furrowing of riparian areas that have been compacted during construction activity is expected to minimize or stop delivery of storm water runoff to the river. As necessary, Reclamation shall provide temporary water pollution control measures, including, but not limited to, 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 shall develop an agency-approved Storm Water Pollution Prevention Plan (SWPPP) to effectively control water pollution during construction of the project. The SWPPP shall 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 shall 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 shall not be allowed to enter, or be placed where they will later enter, a live stream, soil, or groundwater.

Tentative Schedule

Construction associated with either of the action alternatives cannot begin until the environmental process is completed. In addition, the following must have been completed: the final design, plans, contract specifications, and cost estimates; award of contract(s) for work; hazardous materials site assessments; acquisition of rights-of-way; acquisition of permits; and design approvals from local, state, and federal agencies.

The total construction time for the project (completion of Remaining Phase 1 sites) is anticipated to be 3 to 5 years, with approximately 140 days of construction annually between July 15, 2009, and December 31, 2013. However, the schedule depends on funding and the availability of coarse sediment for in-river placement. Initial in-channel gravel additions would be completed during the summer work season (July 15 to September 15). Prior to, or in conjunction with high spring flows (May), coarse sediment augmentation would occur at the sites illustrated on Figure 1-2.

To minimize impacts to breeding bird habitat, vegetation removal activities would also occur in the early spring before nesting. Surface disturbance activities may be limited during the late spring (May and June), depending on the flow release schedule established for the particular water year. Excavation and other grading activities would typically occur between July 15 and December 1 and prior to the onset of the wet season, as site conditions permit. Processing of coarse sediment where stockpiles are large (e.g., SM C-7 and C-13 areas) may extend beyond typical work windows, and processing is expected to continue until the quantity of gravel is depleted (>5 years). Any revegetation (planting/seeding) would take place in the wet season (fall/winter) following construction. It is expected that annual spring additions of coarse sediment will continue indefinitely during peak annual releases from Lewiston Dam.

Phase 2 Sites

As described in previous sections of this document, the Proposed Project for Phase 2 sites is conceptual. The TRRP has developed preliminary objectives that generally correspond to the specific activities described in section 2.5 of this document. Table 2-5 provides a list of the activities that are proposed for each Phase 2 site. While the specific timing, location, and extent of these activities have not been fully defined, the nature of these activities is similar to those included in previous projects implemented by the TRRP. Work at Phase 2 sites will require development of additional NEPA/CEQA documents. While NEPA may require additional EAs, this Master EIR will provide the basis for tiering additional CEQA documents. The TRRP anticipates that activities at several Phase 2 sites could be initiated as early as 2010, subject to completion of the environmental compliance process. The timing and extent of work activities at selected Phase 2 sites would be similar to the schedule described for Remaining Phase 1 sites.

In keeping with the conceptual nature of the Phase 2 portion of the Proposed Project, the specific site boundaries shown on Figure 1-2 are subject to change based on the goals and objectives described in section 2.2. Site-specific information (e.g., biological, physical, and social information) would also influence the planning and design efforts at Phase 2 sites. In general, the design elements and construction criteria and methods applied in the planning, design, and implementation of Phase 2 sites will be similar to those described for the Remaining Phase 1 sites in the preceding section of this

Table 2-5. Conceptual Phase 2 Sites – Proposed Project Rehabilitation Activities

Label	Rehabilitation Activity	Lower Rush Creek	Tom Lang Gulch	Poker Bar	China Gulch	Limekiln Gulch	McIntyre Gulch	Douglas City	Steiner Flat Feathered Edge	Steiner Flat Campground	Lower Steiner Flat	Lorenz Gulch	Dutch Creek	Evan's Bar	Soldier Creek	Chapman Ranch	Deep Gulch	Sheridan Creek	Oregon Gulch	Sky Ranch	Upper Junction City	Lower Junction City	Upper Conner Creek	Wheel Gulch
A	Recontouring and vegetation removal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B	Constructed inundation surface (450 cfs)	X	X	X					X			X	X	X	X	X	X	X	X	X	X	X	X	X
C	Constructed inundation surface (1,000–4,500 cfs)	X	X	X					X			X	X	X	X	X	X	X	X	X	X	X	X	X
D	Constructed inundation surface (6,000–8,000 cfs)	X	X	X					X			X	X	X	X	X	X	X	X	X	X	X	X	X
E	Low-flow side channel (300 cfs)	X		X					X			X			X				X	X				X
F	Medium-flow side channel (1,000 cfs)	X		X					X			X			X									X
G	Alcove (450 cfs; 6,000 cfs)			X					X			X			X									X
H	Grade control removal	X																						
I	Coarse sediment addition	X																						
J	Placement of excavated materials	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K	Staging areas (includes gravel processing/storage)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L	Roads, existing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
M	Roads, new	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
N	Temporary crossings (Trinity River, tributaries)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
O	Revegetation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

document. The information contained in this section is used to describe the timing, kind, size, intensity, and location of the activities associated with Phase 2 sites consistent with the CEQA Guidelines (Section 15176 (a) and (c). The site-specific planning process will be initiated in the spring of 2009 and is expected to be completed for all Phase 2 sites by 2015. Implementation of activities at Phase 2 sites could occur as early as 2010.

2.5.3 Alternative 1

Alternative 1 is similar to the Proposed Project in many respects, particularly for the Remaining Phase 1 sites. The conceptual nature of the Phase 2 sites inhibits the lead agencies' ability to distinguish Alternative 1 from the Proposed Project at the site level. In general terms, Alternative 1 responds to impacts to the biological and, to a greater degree, the human environment. The overall reduction in the size, intensity, and magnitude of rehabilitation activities, particularly those in close proximity to residential or recreational developments, is expected to reduce the significant impacts to various resources, especially to the human environment (e.g., traffic, noise near residential areas, etc.). However, Alternative 1 is not expected to expand Trinity River aquatic habitat complexity and quantity or to enhance natural river processes to the same extent as the Proposed Project. Consequently, benefits to fish and wildlife populations would be reduced compared to the Proposed Project.

Similar to the Proposed Project, the TRRP has identified 15 discrete activities that are incorporated into Alternative 1. One or more of these activities are proposed for each of the activity areas associated with the Remaining Phase 1 sites. At the planning level, activities associated with Phase 2 are conceptual. The following section provides a description of Alternative 1 for the Remaining Phase 1 and Phase 2 sites.

Remaining Phase 1 Sites

Alternative 1 includes specific activities proposed at 122 activity areas within the boundaries of the Remaining Phase 1 sites: SM, UR, LR, THG, SB, and RC. This is a reduction of 36 activity areas spread across five of the sites. Under Alternative 1, activities proposed at the SM site are identical to the Proposed Project. Alternative 1 excludes all activities on the left bank of the Trinity River at the UR site and at the lower end of the RC site, primarily due to access and other logistical considerations.

Figures 2-2a through 2-2f show the activities for the Remaining Phase 1 sites included in Alternative 1. In addition to a net reduction in activity areas at five of the Remaining Phase 1 sites, this alternative modifies the type and magnitude of activities. Alternative 1 excludes seven in-channel and three riverine activity areas and reduces the number of temporary crossings by three compared to the Proposed Project. Under this alternative, excavation activities associated with the Remaining Phase 1 sites are expected to yield more than 350,000 cubic yards of alluvial material. These sites collectively provide the capacity to place almost 365,000 yards of material in the event this space is necessary during implementation. Alternative 1 would also reduce the roads necessary to access activity areas by about 2 miles. Table 2-6 provides a comprehensive description of the activity/treatment areas, the estimated volume of alluvial

material that would be excavated at each activity area, the miles of road needed to support project activities, and the type of activities proposed under Alternative 1.

Similar to the Proposed Project, riverine activities on both sides of the Trinity River would use adjacent upland and staging areas to dispose of and/or stockpile excavated or processed materials within the boundaries of the sites. These sites include public and private lands within a narrow corridor parallel to the river.

In addition to the activities listed in Table 2-6, Alternative 1 includes activities intended to implement the TRRP's Sediment Management Plan. These sediment management activities would occur primarily upstream of Weaver Creek but could be included as design elements (e.g., placement of coarse sediment as point bars) within Phase 2 site boundaries as required to increase aquatic habitat complexity (Figure 1-2). Sediment management activities include:

- placement of select sediment at in-channel, riverine, and upland activity areas in conjunction with mechanical channel rehabilitation activities to meet aquatic and terrestrial wildlife habitat objectives;
- long-term injection of select sediment at strategic locations upstream of Weaver Creek during high-flow events; and
- ongoing removal and disposal of fine sediment captured at the Hamilton Pond retention facility.

Design Elements

The following Alternative 1 design elements reflect changes from the Proposed Project.

Roadway Approaches

The UR site would be accessed using Rush Creek Road and various private roads and driveways on the right side of the Trinity River. The RC site would be accessed using SR 3, Steiner Flat Road, and various private roads and driveways. Public roads that access these sites are managed by the BLM, Caltrans, or Trinity County. In addition to Trinity County, BLM and CDFG maintain river access points within the project boundaries of these sites.

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, with up to 36 trucks per day hauling materials offsite, generally between August 1 and October 15. Hauling of coarse sediment for placement at long-term high-flow placement areas in Lewiston will take place annually for approximately 2 weeks between November and May. Depending on funding and the timing of implementation, these trucks would be used for approximately 5 seasons of construction work. Placement of coarse sediment is planned to continue indefinitely. Traffic control measures would be applied in accordance with Trinity County and Caltrans requirements.

Site Boundary (103.421 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:3,600

300 0 300

Feet

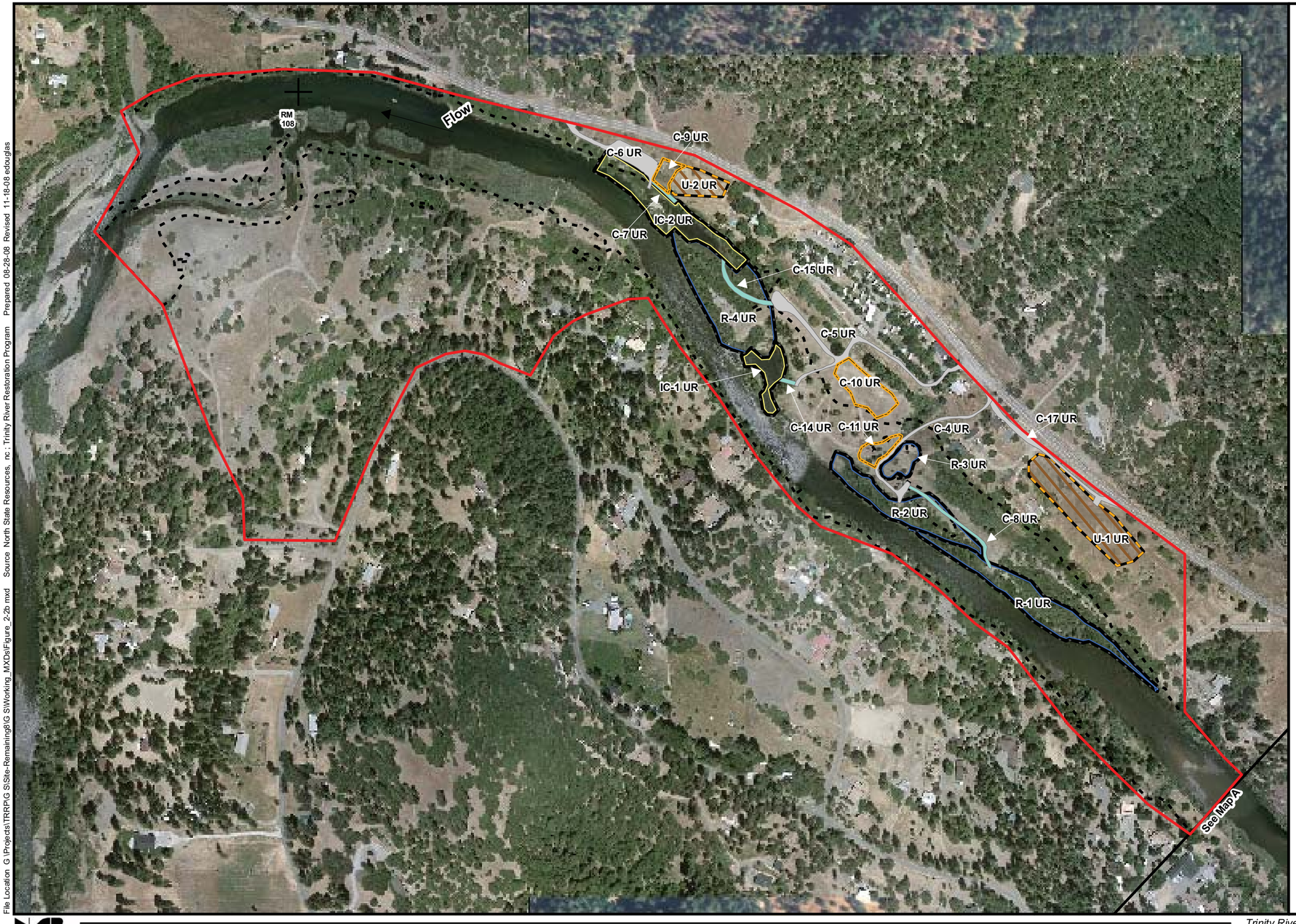
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-2a.mxd Source North State Resources, nc ; Trinity River Restoration Program Prepared 08-28-08 Revised 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2a
Sawmill - Alternative 1



Site Boundary (92.274 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:4,200

350 0 350

Feet

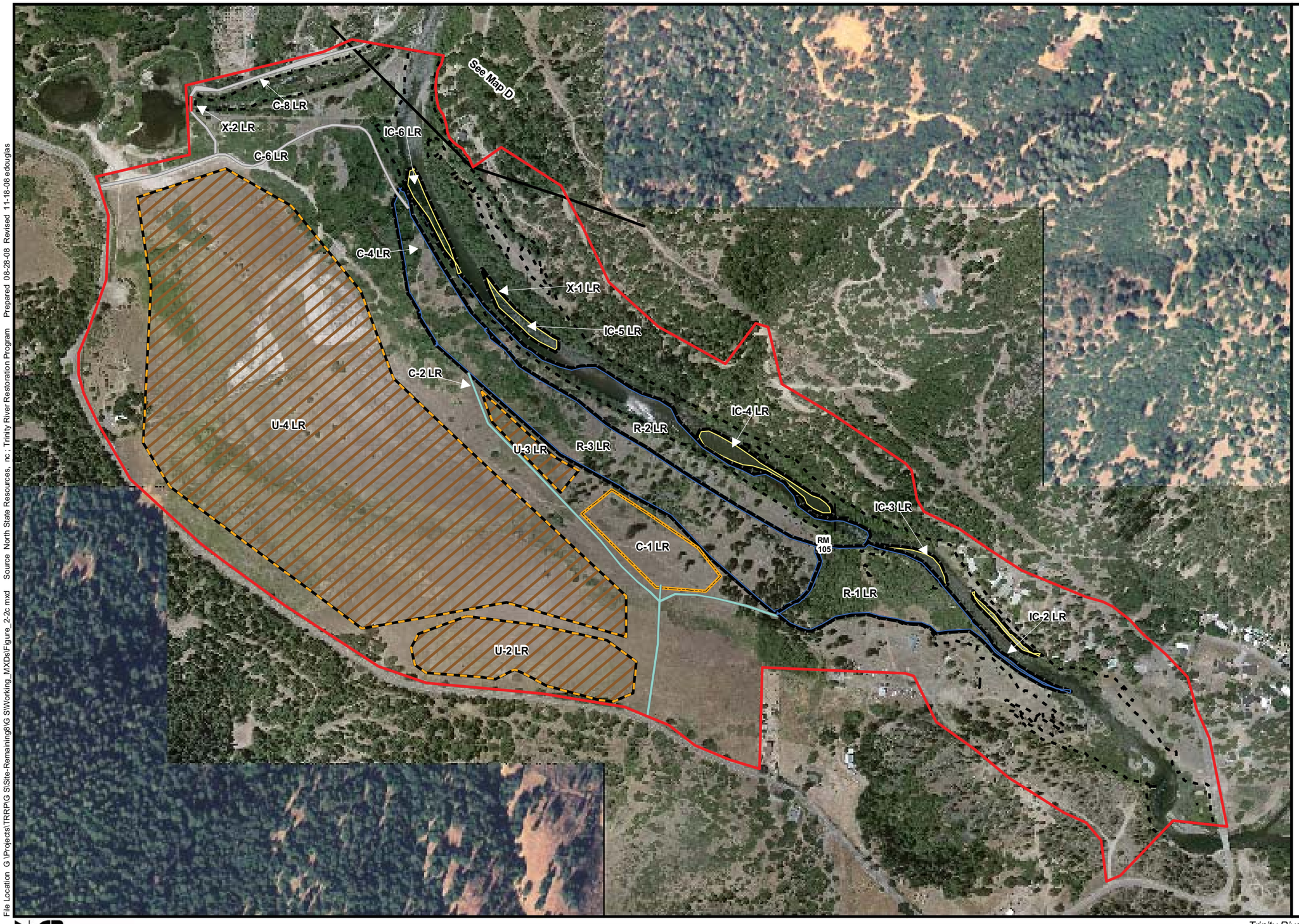
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location: G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-2b.mxd Source: North State Resources, Inc.; Trinity River Restoration Program Prepared: 08-28-08 Revised: 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2b
Upper Rush Creek - Alternative 1



Site Boundary (211.769 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Crossing
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland
- Ordinary High Water Mark (OHWM) - 6000 cfs
- River Mile (RM)
- Matchline

N

1:5,400

450 0 450
Feet

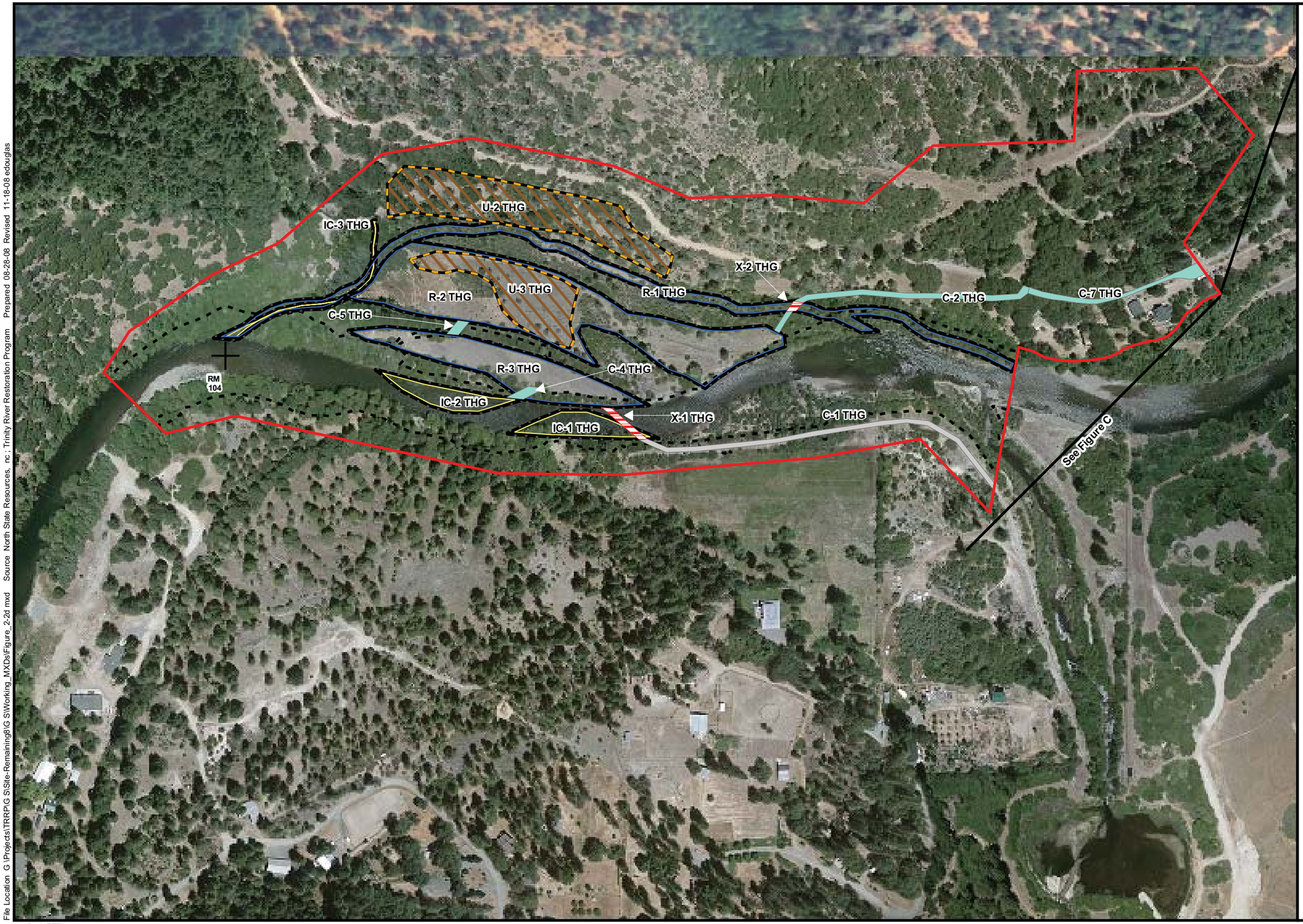
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-2c.mxd Source North State Resources, inc.; Trinity River Restoration Program Prepared 08-28-08 Revised 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2c
Lowden Ranch - Alternative 1



Site Boundary (43.695 acres)

Construction Areas

Name

Access Road - Existing

Access Road - New

Crossing

Activity Areas

Area

In Channel

Riverine

Upland

Ordinary High Water Mark (OHWM) - 6000 cfs

River Mile (RM)

Matchline

N

1:3,000

250 0 250

Feet

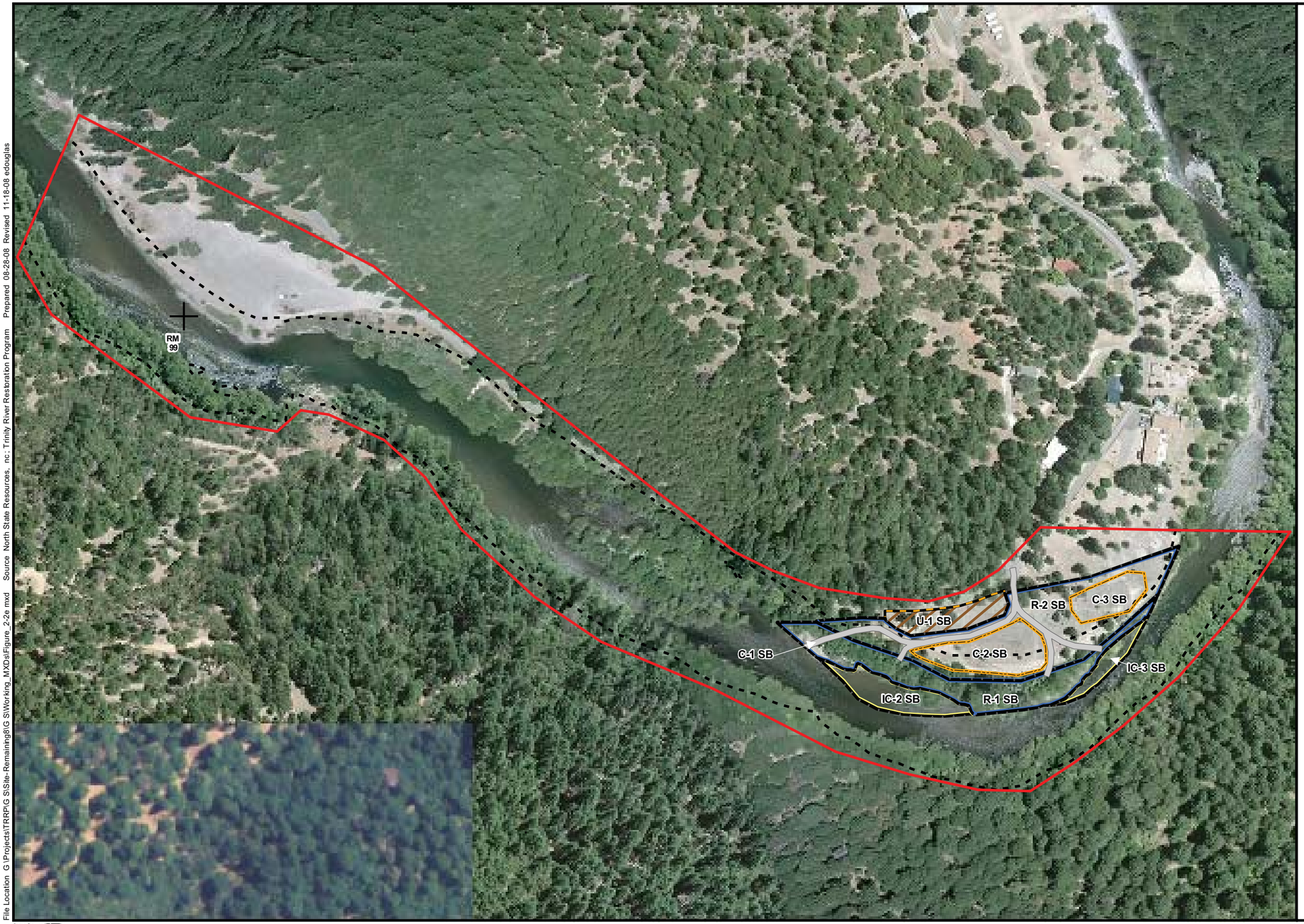
Note: Legend symbol swatches do not necessarily reflect map symbology based on rotation angle of north arrow.

File Location: G:\Projects\TRRP\G S\Site-Remaining\$\G S\Working_MXDs\Figure_2-2d.mxd Source: North State Resources, Inc.; Trinity River Restoration Program Prepared: 08-28-08 Revised: 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2d
Trinity House Gulch - Alternative 1



Site Boundary (22.475 acres)

Construction Areas

Name

Access Road - New

Staging Area

Activity Areas

Area

In Channel

Riverine

Upland

Ordinary High Water Mark (OHWM) - 6000 cfs

River Mile (RM)

Matchline

N

1:2,400

200 0 200

Feet

Note: Legend symbol swatches do not necessary reflect map symbology based on rotation angle of north angle.

File Location G:\Projects\TRRP\GIS\Site-Remaining8\GIS\Working_MXDs\Figure_2-2e.mxd Source North State Resources, nc.; Trinity River Restoration Program Prepared 08-28-08 Revised 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2e
Steel Bridge Day Use - Alternative 1

Site Boundary (135.871 acres)

Construction Areas

Name

- Access Road - Existing
- Access Road - New
- Staging Area

Activity Areas

Area

- In Channel
- Riverine
- Upland

Ordinary High Water Mark (OHWM) - 6000 cfs

River Mile (RM)

Matchline

N

1:4,200

350 0 350

Feet

File Location: G:\Projects\TRRP\G S\Site-Remaining8\G S\Working_MXDs\Figure_2-2f.mxd Source: North State Resources, Inc.; Trinity River Restoration Program Prepared: 08-28-08 Revised: 11-18-08 edouglas

North State Resources, Inc.

Trinity River Restoration Program: Remaining Phase 1 Sites

Figure 2-2f
Reading Creek - Alternative 1

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
		Sawmill Site		
IC-1 SM	0.064	400	0.000	H, I
IC-2 SM	0.163	600	0.000	H, I
IC-3 SM	0.413	2,000	0.000	H, I
IC-4 SM	0.819	1,000	0.000	H, I
IC-5 SM	0.216	1,000	0.000	I
IC-6 SM	0.205	700	0.000	I
IC-7 SM	0.219	1,400	0.000	I
IC-8 SM	0.230	1,500	0.000	I
IC-9 SM	0.298	1,400	0.000	I
IC-10 SM	0.347	2,200	0.000	I
IC-11 SM	0.282	1,400	0.000	I
IC Subtotal	**3.256**	**13,600**	**0.000**	
R-1 SM	0.447	2,900	0.000	A, D, K, O
R-2 SM	3.878	26,000	0.000	A, C, D, K, O
R-3 SM	0.053	500	0.000	A, E, D, O
R-4 SM	0.241	5,900	0.000	A, E, H, O
R-5 SM	0.096	300	0.000	A, H
R-6 SM	0.207	700	0.000	A, D, O
R-7 SM	0.123	400	0.000	A, C, E, H
R-8 SM	5.960	82,300	0.000	A, C, D, K, O
R-9 SM	0.173	600	0.000	A, C, E, H
R-10 SM	3.932	36,900	0.000	A, D, J, K, O
R Subtotal	**15.111**	**156,500**	**0.000**	
U-1 SM	0.833	20,200	0.000	A, J, K, O
U-2 SM	1.384	33,500	0.000	A, J, K, O
U-3 SM	1.417	60,000	0.000	A, J, K, O
U Subtotal	**3.634**	**113,700**	**0.000**	
C-1 SM	1.709	0	0.000	K, O
C-2 SM	0.487	0	0.000	K, O
C-3 SM	0.163	0	0.000	K, O

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-4 SM	0.665	0	0.000	K, M, O
C-5 SM	0.332	0	0.000	M, O
C-6 SM	0.446	0	0.222	L, O
C-7 SM	0.186	0	0.298	K, M, O
C-8 SM	0.216	0	0.126	M, O
C-9 SM	0.012	0	0.125	M, O
C-10 SM	0.108	0	0.000	M, O
C-11 SM	0.009	0	0.066	M, O
C-12 SM	0.105	0	0.003	M, O
C-13 SM	5.920	0	0.080	A, J, K, O
C Subtotal	**10.360**	**0**	**0.920**	
X-1 SM	0.041	0	0.005	X
X-2 SM	0.018	0	0.006	X
X-3 SM	0.015	0	0.005	X
X-4 SM	0.006	0	0.005	X
X-5 SM	0.025	0	0.017	X
X-6 SM	0.014	0	0.001	X
X Subtotal	**0.118**	**0**	**0.039**	
SM Total	**32.479**	**283,800**	**0.959**	
		Upper Rush Creek Site		
IC-1 UR	0.391	0	0.000	I, A, G, O
IC-2 UR	1.230	0	0.000	I, A, G, O
IC Subtotal	**1.621**	**0**	**0.000**	
R-1 UR	1.439	1,155	0.000	A, C, E, O
R-2 UR	1.140	2,100	0.000	A, B, D, E, O
R-3 UR	0.263	545	0.000	A, J, O
R-4 UR	2.031	6,500	0.000	A, D, E, O
R Subtotal	**4.873**	**10,300**	**0.000**	
U-1 UR	1.293	7,500	0.000	A, J, O
U-2 UR	0.396	2,500	0.000	A, J, O
U Subtotal	**1.689**	**10,000**	**0.000**	

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-4 UR	0.206	0	0.140	L, O
C-5 UR	0.399	0	0.194	L, O
C-6 UR	0.347	0	0.076	A, L, K, O
C-7 UR	0.033	0	0.015	M, O
C-8 UR	0.115	0	0.081	M, O
C-9 UR	0.152	0	0.000	K, O
C-10 UR	0.521	0	0.000	A, K, O
C-11 UR	0.190	0	0.000	A, K, O
C-14 UR	0.017	0	0.005	M, O
C-15 UR	0.101	0	0.050	M, O
C-17 UR	0.220	0	0.112	L, O
C Subtotal	**2.303**	**N/A**	**0.679**	
UR Total	**10.486**	**20,300**	**0.679**	
		Lowden Ranch Site		
IC-1 LR	0.257	3,200	0.000	I
IC-3 LR	0.329	3,500	0.000	I
IC-4 LR	0.946	10,270	0.000	I
IC-5 LR	0.559	3,500	0.000	I
IC-6 LR	0.526	3,200	0.000	I
IC Subtotal	**2.617**	**23,670**	**0.000**	
R-1 LR	5.591	24,500	0.000	A, B, C, E, K, O
R-2 LR	8.034	52,300	0.000	A, B, E, K, O
R-3 LR	13.812	10,000	0.000	A, C, E, K, O
R Subtotal	**27.436**	**86,800**	**0.000**	
U-2 LR	5.990	60,000	0.000	A, J, O
U-3 LR	1.086	20,000	0.000	A, J, O
U-4 LR	56.946	0	0.000	A, J, O
U Subtotal	**64.023**	**80,000**	**0.000**	
C-1 LR	3.221	0	0.000	A, K, O
C-2 LR	0.718	0	0.474	M, O
C-6 LR	0.482	0	0.322	L, O

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-8 LR	0.403	0	0.224	L, O
C Subtotal	**4.824**	**0**	**1.020**	
X-2 LR	0.019	0	0.013	X
Subtotal X	**0.019**	**0**	**0.013**	
LR Total	**98.918**	**190,470**	**1.033**	
		Trinity House Gulch Site		
IC-1 THG	0.374	1,500	0.000	I
IC-2 THG	0.337	1,600	0.000	I
IC-3 THG	0.123	600	0.000	I, A, B, E, G
IC Subtotal	**0.833**	**3,700**	**0.000**	
R-1 THG	1.316	8,500	0.000	A, E, K, O
R-2 THG	3.503	1,000	0.000	A, B, C, D, E, K, O
R-3 THG	1.253	12,000	0.000	A, B, C, D, E, K, O
Subtotal R	**6.073**	**21,500**	**0.000**	**A, E, K, O**
U-2 THG	1.789	10,000	0.000	A, J, O
U-3 THG	0.974	6,700	0.000	A, J, O
Subtotal U	**2.764**	**16,700**	**0.000**	
C-1 THG	0.274	0	0.188	L, O
C-2 THG	0.230	0	0.130	M, O
C-4 THG	0.034	0	0.010	M, O
C-5 THG	0.025	0	0.008	M, O
C-7 THG	0.155	0	0.083	L, O
Subtotal C	**0.718**	**N/A**	**0.419**	
X-1 THG	0.044	0	0.019	X
X-2 THG	0.015	0	0.005	X
Subtotal X	**0.059**	**N/A**	**0.025**	
THG Total	**10.447**	**41,900**	**0.443**	
		Steel Bridge Day Use Site		
IC-2 SB	0.334	1,500	0.000	I
IC-3 SB	0.146	1,000	0.000	I

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
Subtotal IC	**0.480**	**2,500**	**0.000**	
R-1 SB	0.868	2,000	0.000	A, B, E, O
R-2 SB	1.800	1,000	0.000	A, C, E, K, O
Subtotal R	**2.668**	**3,000**	**0.000**	
U-1 SB	0.282	1,500	0.000	A, K, O
Subtotal U	**0.282**	**1,500**	**0.000**	
C-1 SB	0.246	0	0.149	A, M, O
C-2 SB	0.431	0	0.000	A, K, O
C-3 SB	0.236	0	0.000	A, K, O
Subtotal C	**0.912**	**N/A**	**0.149**	
SB Total	**4.343**	**7,000**	**0.149**	
		Reading Creek Site		
IC1-RC	0.241	1,600	0.000	I
IC2-RC	0.324	2,100	0.000	I
IC3-RC	0.300	1,600	0.000	I
IC4-RC	0.328	2,100	0.000	I
IC5-RC	0.340	2,200	0.000	I
Subtotal IC	**1.533**	**9,600**	**0.000**	
R1-RC	2.571	13,600	0.000	A, C, D, O
R2-RC	3.692	13,900	0.000	A, C, D, K, O
R3-RC	0.273	2,200	0.000	A, B, E, K, O
R4-RC	4.323	44,400	0.000	A, C, D, K, O
Subtotal R	**10.860**	**74,100**	**0.000**	
U-1 RC	1.281	15,600	0.000	A, J, K, O
U-2 RC	0.657	7,500	0.000	A, J, K, O
U-3 RC	5.136	64,400	0.000	A, J, K, O
Subtotal U	**7.074**	**87,500**	**0.000**	
C-1 RC	1.111	0	0.642	L, O
C-3 RC	0.137	0	0.088	M, O
C-4 RC	0.400	0	0.261	L, O

Table 2-6. Summary of Alternative 1 – Remaining Phase 1 Sites

Activity Area	Activity/ Treatment Area (acres)[a]	Volume (cubic yards)[b]	Miles of Road[a]	Activity
C-7 RC	0.255	0	0.000	A, K, O
C-10 RC	0.416	0	0.000	A, K, O
C-11 RC	0.102	0	0.066	M, O
C-14 RC	0.431	0	0.246	L, O
C-15 RC	0.077	0	0.034	A, M, O
Subtotal C	**2.928**	**N/A**	**1.337**	
RC Total	**22.395**	**171,200**	**1.337**	

[a]Area calculated from project GIS [b]Provided by TRRP

Construction Criteria and Methods

Construction Process Overview

The following section describes differences in the Alternative 1 construction processes compared to the Proposed Project.

Staging Areas

Staging areas and storage facilities for Alternative 1 are shown on Figures 2-2a-f and listed in Table 2-6. These areas would be used throughout the duration of the project activities. Some short-term staging, equipment storage, and parking are anticipated in the activity areas as the project is implemented.

Tentative Schedule

Construction associated with either of the action alternatives cannot begin until the environmental compliance process is completed. In addition, the following must have been completed: the final design, plans, contract specifications, and cost estimates; award of contract(s) for work; acquisition of rights-of-way; acquisition of permits; and design approvals from local, state, and federal agencies.

The total construction time for the Remaining Phase 1 sites included in Alternative 1 is anticipated to be 2 to 3 years, with approximately 140 days of construction annually between July 15, 2009, and December 31, 2011. However, the schedule depends on funding and the availability of coarse sediment for in-river placement. Initial in-channel gravel additions would be completed during the summer work season (July 15 to September 15) over the courses of 2 to 3 years. Prior to, or in conjunction with, high spring flows, coarse sediment augmentation would occur at the sites illustrated on Figure 1-2.

To minimize impacts to breeding bird habitat, vegetation removal activities would also occur in the early spring. Surface disturbance activities may be limited during the late spring (May and June), depending on the flow release schedule established for the particular water year. Excavation and other grading activities would typically occur between July 15 and December 1 and prior to the onset of the wet season,

as site conditions permit. Processing of coarse sediment where stockpiles are large (e.g., SM C-7 and C-13 areas) may extend beyond typical work windows, and processing is expected to continue until the quantity of gravel is depleted (>5 years). Any revegetation (planting/seeding) would take place in the wet season (fall/winter) following construction. It is expected that annual spring additions of coarse sediment will continue indefinitely during peak annual releases from Lewiston Dam.

Phase 2 Sites

As described in previous sections of this document, Alternative 1 for the Phase 2 sites is conceptual in nature. The TRRP has developed preliminary objectives that generally correspond to the specific activities listed in Table 2-1. Table 2-7 provides a list of the conceptual activities that are proposed for each Phase 2 site. Although the specific location and extent of these activities are preliminary at this point in the planning process, the nature of these activities is similar to previous projects implemented by the TRRP over the past 4 years.

In keeping with the conceptual nature of Phase 2 of the Proposed Project, the specific site boundaries, as shown on Figure 1-2, are subject to change based on the objectives described in section 2.2. Site-specific information (e.g., biological, physical, and social information) would also influence the planning and design efforts at Phase 2 sites. In general, the design elements and construction criteria and methods applied in the planning, design, and implementation of Phase 2 sites will be similar to those described for the Remaining Phase 1 sites. The information contained in this section is used to describe the kind, size, intensity, and location of the activities associated with Phase 2 sites consistent with the CEQA Guidelines (Section 15176 (a) and (c).

2.6 Representative Construction Activities

To illustrate the type and extent of rehabilitation activities described in the previous section, a series of illustrations was prepared to represent the activities included in the action alternatives (Figures 2-3a-j). These figures are included at the end of this chapter.

2.7 Alternatives Considered but Eliminated from Further Evaluation

2.7.1 Dispose of Material Below 100-Year Base Flood Elevation

To minimize material haul distance and cost, placing excavated material below the 100-year base flood elevation was considered. This option would involve moving excavated material a short distance and depositing it in an adjacent flat area within the floodplain. After investigation, it was determined that placing large amounts of material in the floodplain associated with the Remaining Phase 1 sites could result in undesirable changes to FEMA flood elevations both within and outside of the project boundaries.

Table 2-7. Conceptual Phase 2 Sites – Alternative 1 Rehabilitation Activities

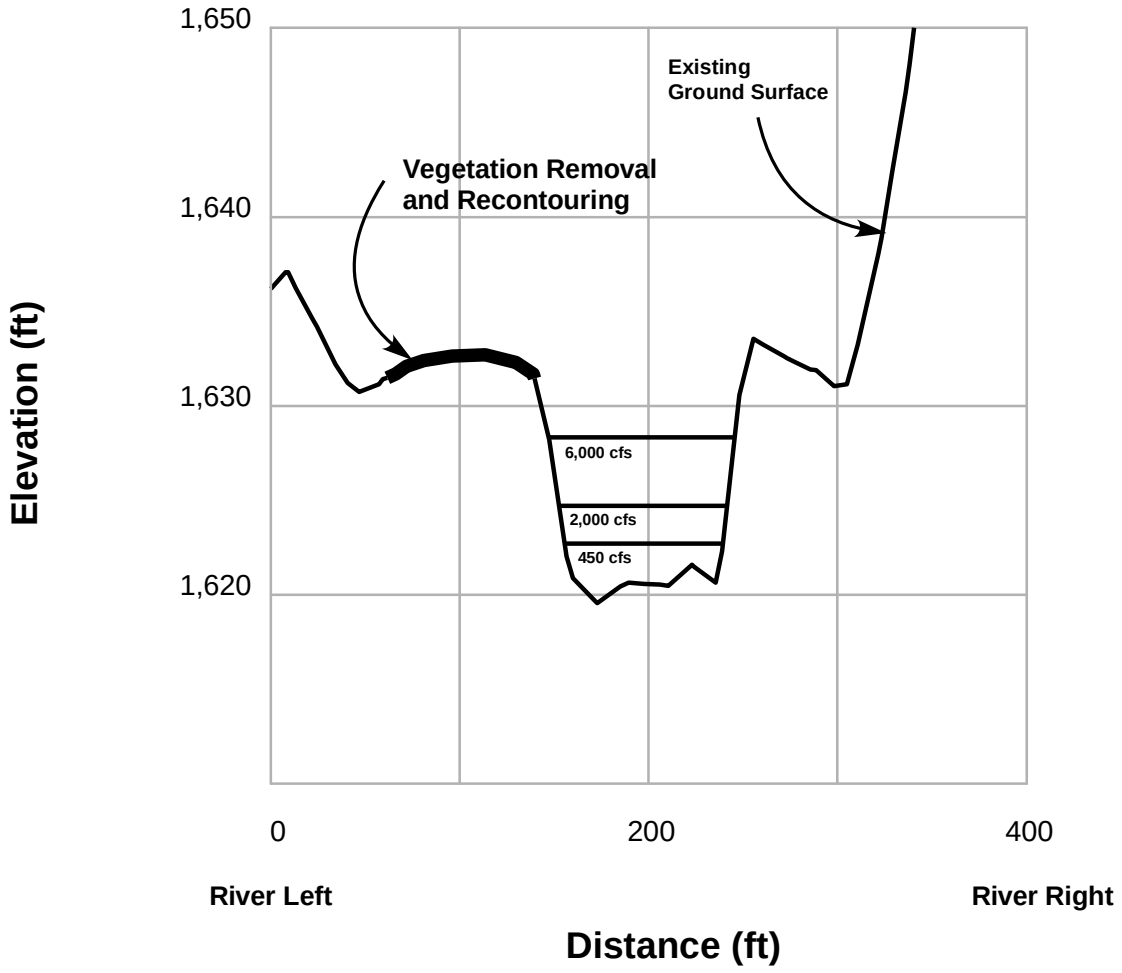
Label	Rehabilitation Activity	Lower Rush Creek	Tom Lang Gulch	Poker Bar	China Gulch	Limekiln Gulch	McIntyre Gulch	Douglas City	Steiner Flat Feathered Edge	Steiner Flat Campground	Lower Steiner Flat	Lorenz Gulch	Dutch Creek	Evan's Bar	Soldier Creek	Chapman Ranch	Deep Gulch	Sheridan Creek	Oregon Gulch	Sky Ranch	Upper Junction City	Lower Junction City	Upper Conner Creek	Wheel Gulch
A	Recontouring and vegetation removal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B	Constructed inundated surface (450 cfs)																							
C	Constructed inundated surface (1,000–4,500 cfs)																							
D	Constructed inundated surface (6,000–8,000 cfs)																							
E	Low-flow side channel (300 cfs)	X		X					X			X			X				X	X				X
F	Medium-flow side channel (1,000 cfs)	X		X					X			X			X									X
G	Alcove (450 cfs, 6,000 cfs)			X					X			X			X									X
H	Grade control removal	X																						
I	Coarse sediment addition	X																						
J	Placement of excavated materials	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K	Staging areas (includes gravel processing/storage)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L	Roads, existing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
M	Roads, new	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
N	Temporary crossings (Trinity River)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
O	Revegetation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

2.7.2 Increase Removal of Riparian Vegetation

In addition to influencing the alluvial processes that have been reestablished (to varying degrees) post-ROD, the distribution and density of riparian vegetation adjacent to the Trinity River below the TRD inhibits views of the river from a number of locations, including residences, businesses, and recreational river access points. As the Proposed Project was developed, the lead agencies considered an alternative that would substantially increase removal of riparian vegetation, particularly at the Remaining Phase 1 sites, to enhance the aesthetic values for local residents and visitors to the Trinity River. Based on input from agencies and local landowners, the lead agencies considered the request to remove more riparian vegetation, but determined that the level of vegetation removal required to enhance aesthetic values could result in significant adverse environmental impacts and is beyond that required to meet the fundamental objectives of the TRRP as previously described in this chapter.

File Location: Projects\TRRP\GIS\Site-Master8\GIS\Working_MXDs\Figure_2-3a_VegRemoval_XS.mxd Source: North State Resources, Inc.; USBR; DWR Prepared: 10-12-08 Revised: 11-20-08 edouglas

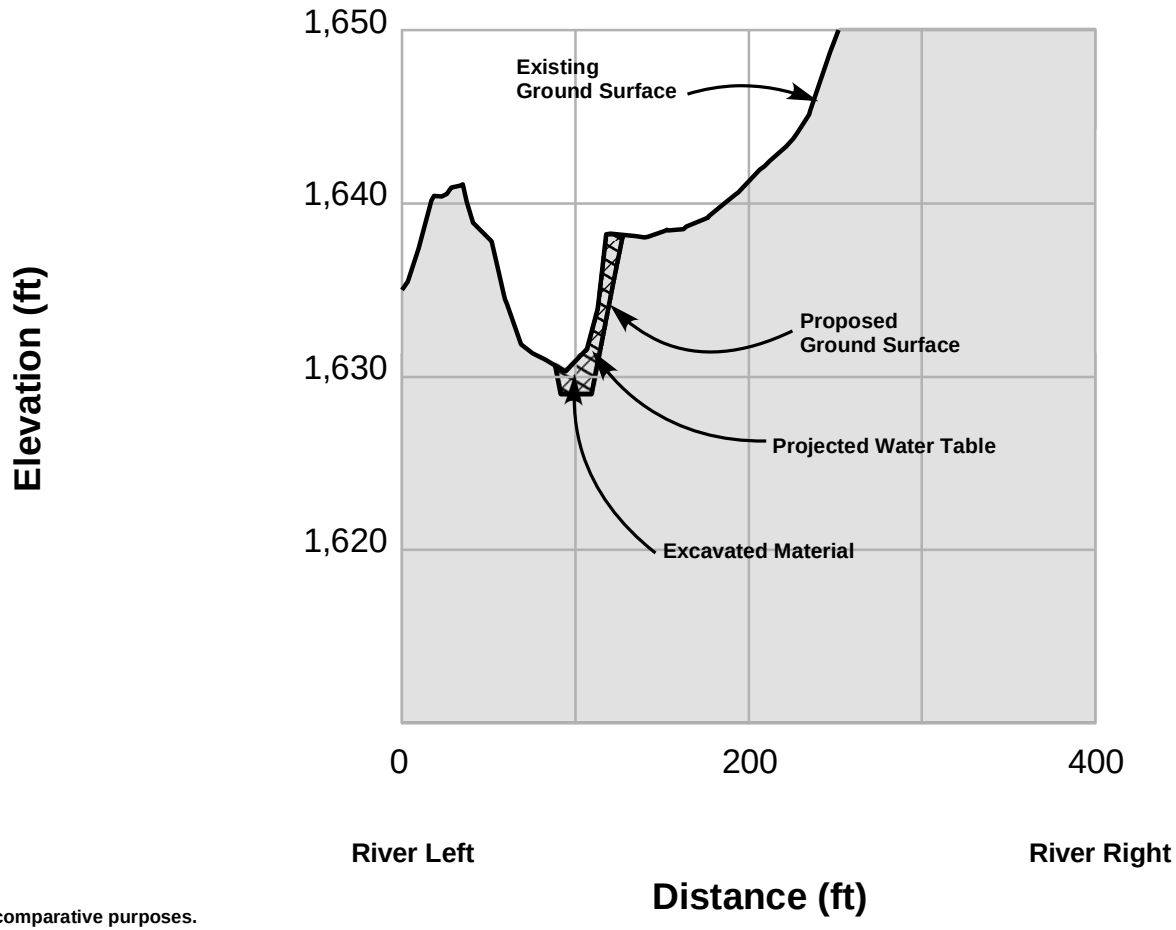
Cross Section



Note:
1) Not to scale. Shown for comparative purposes

Figure 2-3a
Typical Vegetation Removal and Recontouring

Cross Section



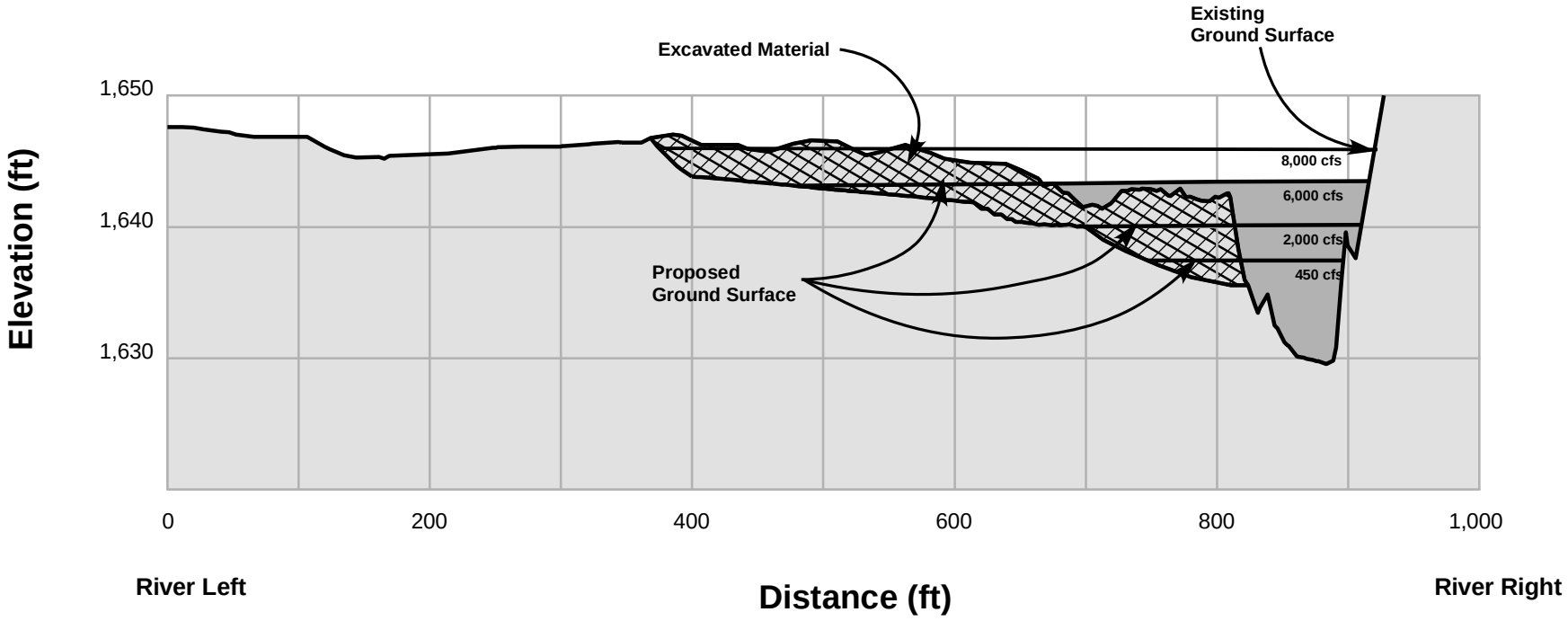
Note:
1) Not to scale. Shown for comparative purposes.

2) As planned at various locations to mitigate impacted riparian areas which are not adjacent to the river.

Figure 2-3b
Typical Riparian Enhancement

File Location: Projects\TRRP\GIS\Site-Master8\GIS\Working_MXDs\Figure_2_3c_Floodplain_XS.mxd Source: North State Resources, Inc.; USBR; DWR Prepared: 10-12-08 Revised: 11-20-08 edouglas

Cross Section

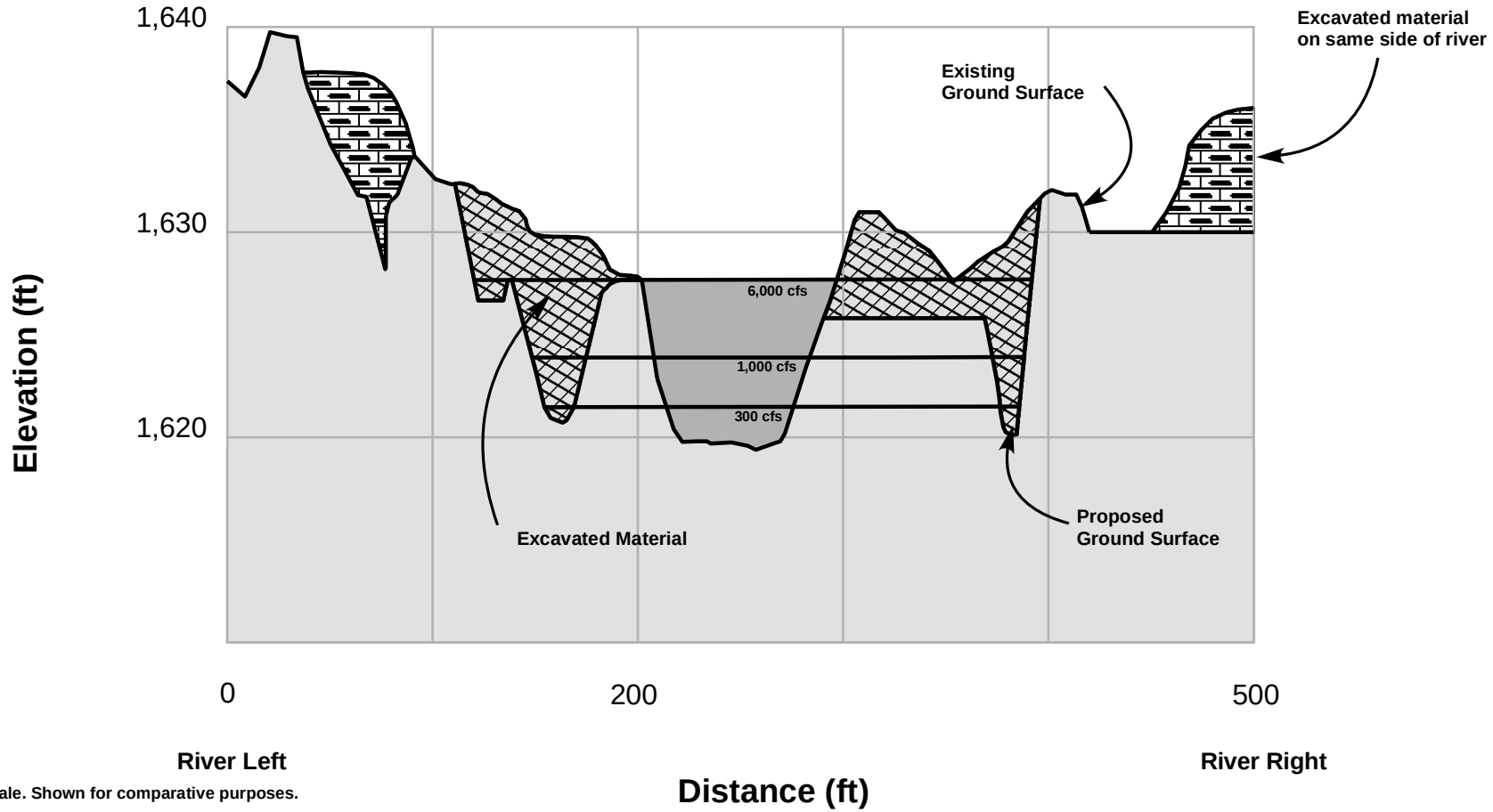


Note:
1) Not to scale. Shown for comparative purposes.

2) Floodplain will be constructed approximately 1 foot below water surface elevation at selected flow (8,000; 6,000; 2,000; or 450 cfs), sloped downriver.

Figure 2-3c
Typical Constructed Floodplain

Cross Section

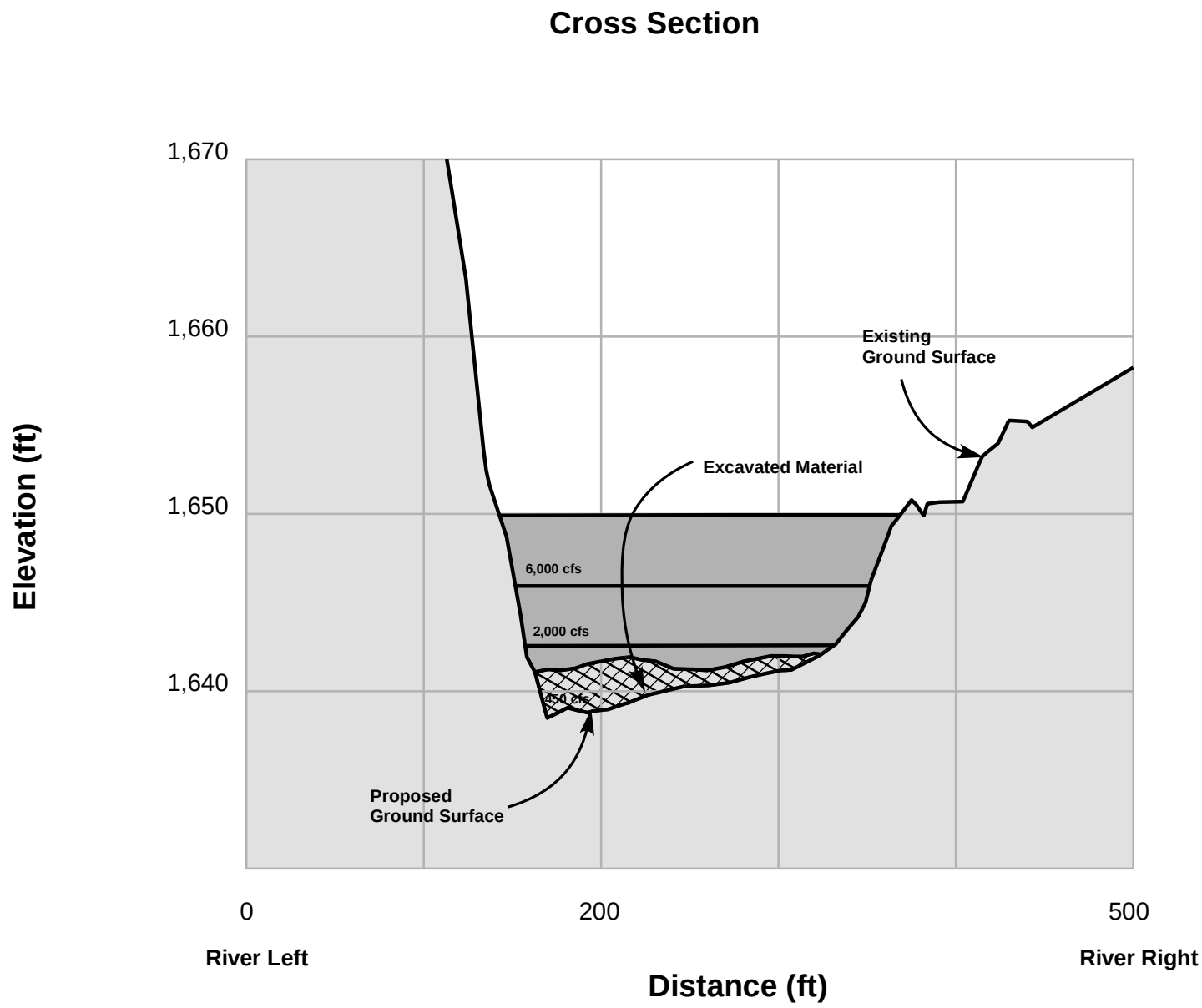


Notes:
1) Not to scale. Shown for comparative purposes.

2) Medium flow side channel designed to flow approximately 1 foot deep at 1,000 cfs.

3) Low flow side channel designed to flow approximately 1 foot deep at 300 cfs.

Figure 2-3d
Typical Medium and Low Flow Side Channels

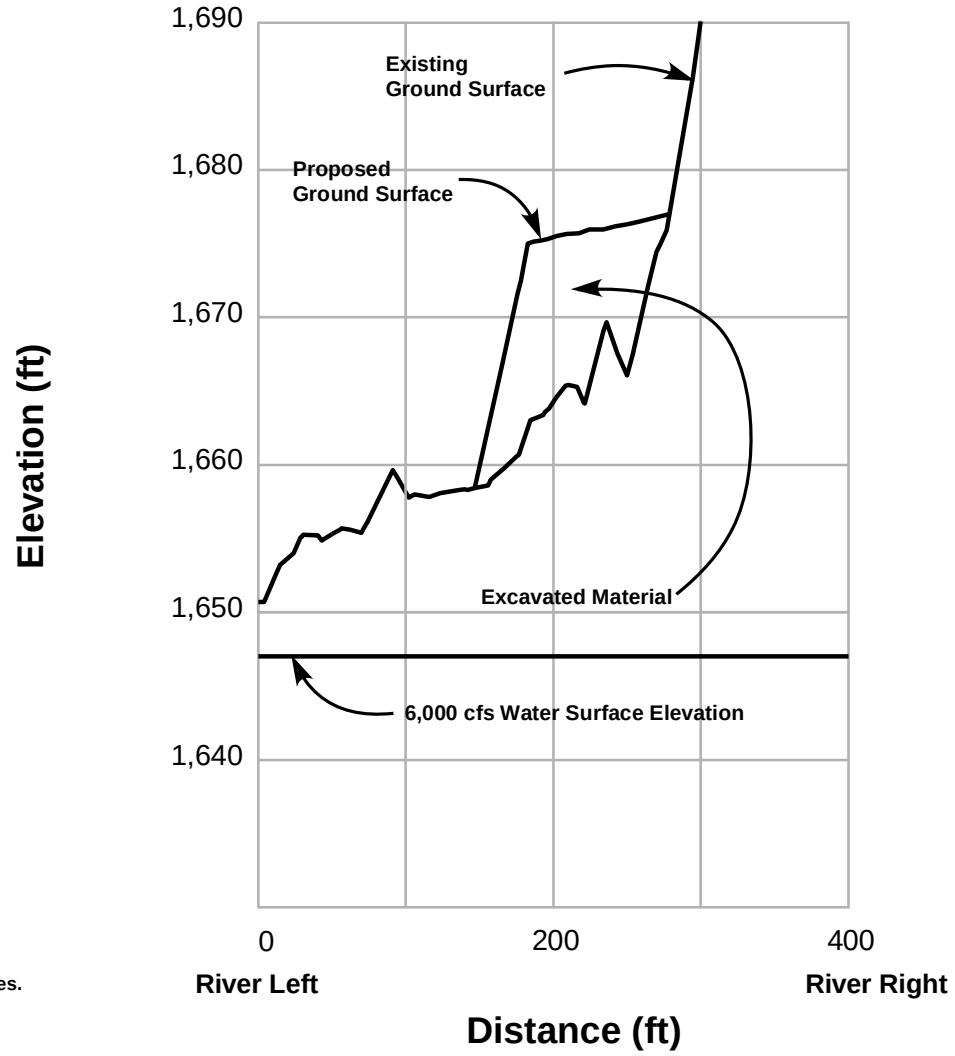


Notes:
1) Not to scale. Shown for comparative purposes.

2) Remove Natural & constructed Grade Control Structures.

Figure 2-3e
Typical Grade Control Removal

Cross Section



Notes:

1) Not to scale. Shown for comparative purposes.

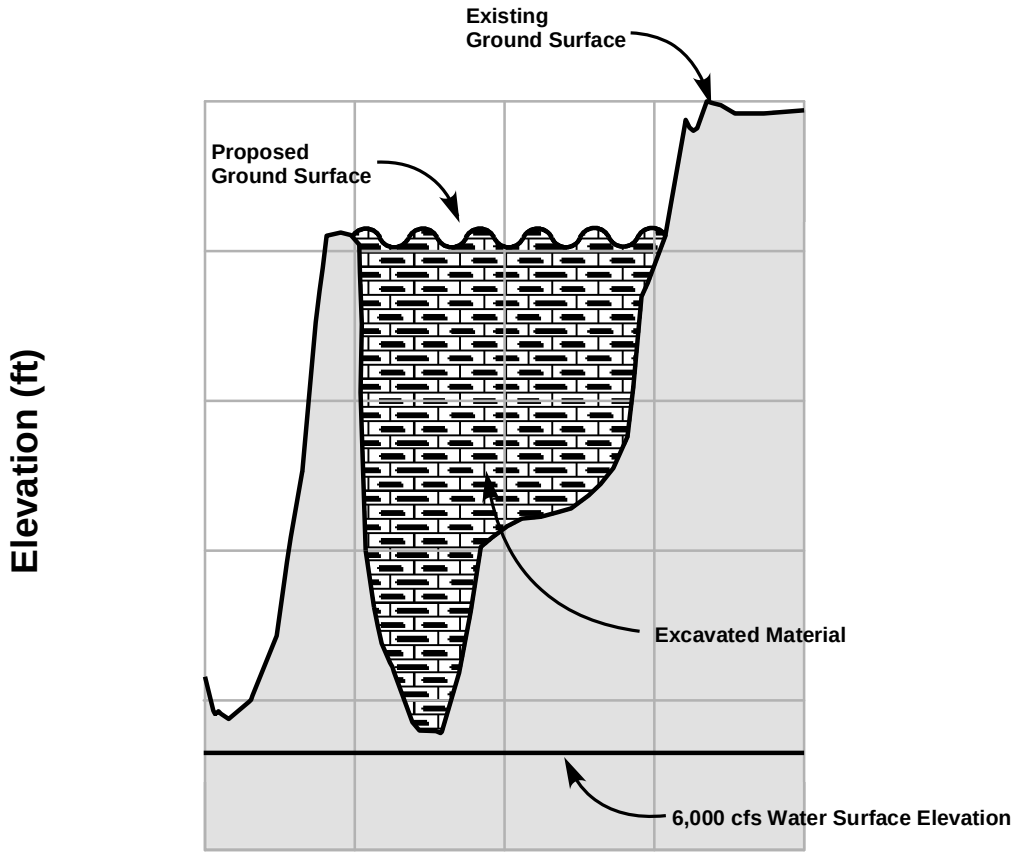
2) Slope constructed to drain toward river.

3) Material placed above base flood elevation where feasible.

Figure 2-3f
Typical Backslope Disposal

File Location: Projects\TRRP\GIS\Site-Master8\GIS\Working_MXDs\Figure_2_3g_Disposal_XS mxd Source: North State Resources, Inc.; USBR; DWR Prepared: 10-12-08 Revised: 11-20-08 edouglas

Cross Section

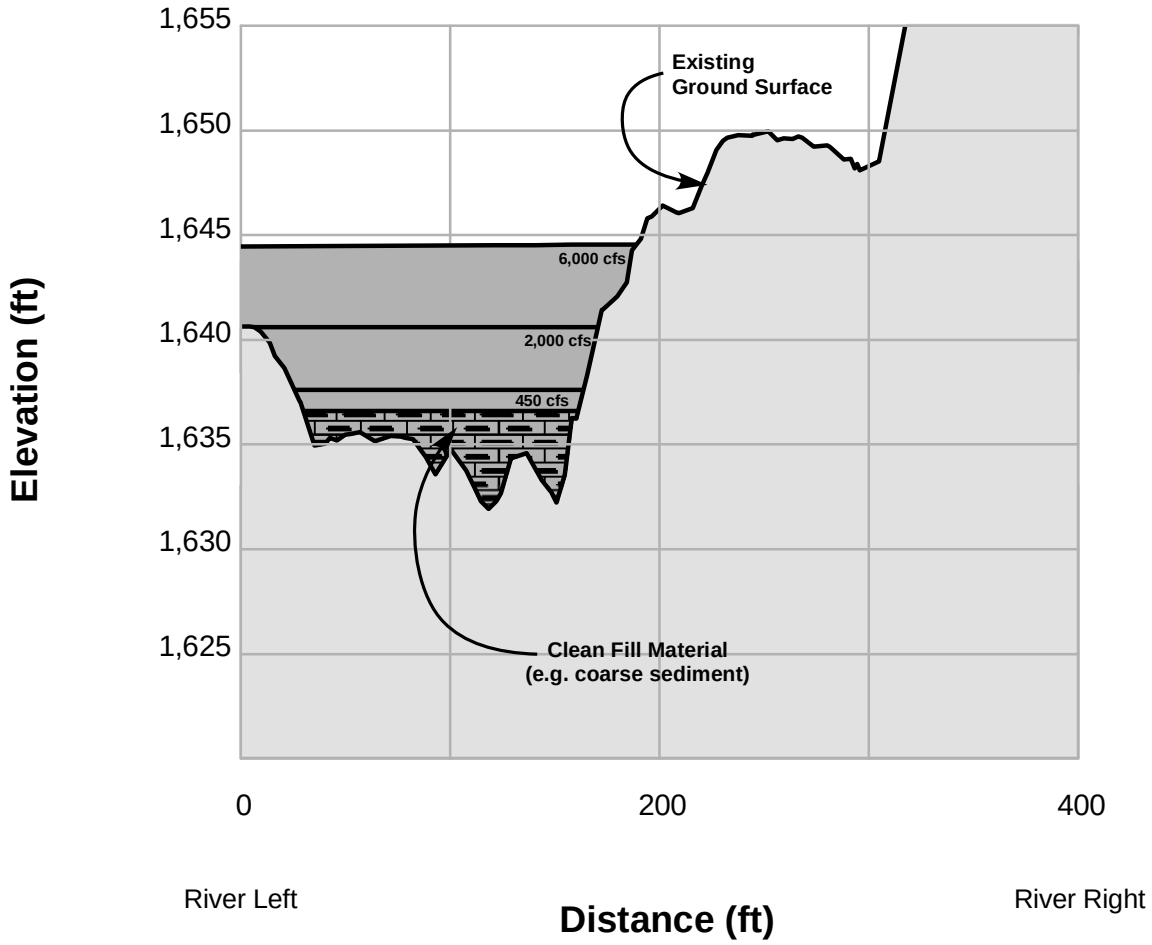


Note:
1) Not to scale. Shown for comparative purposes

2) Material placed above base flood elevation where feasible.

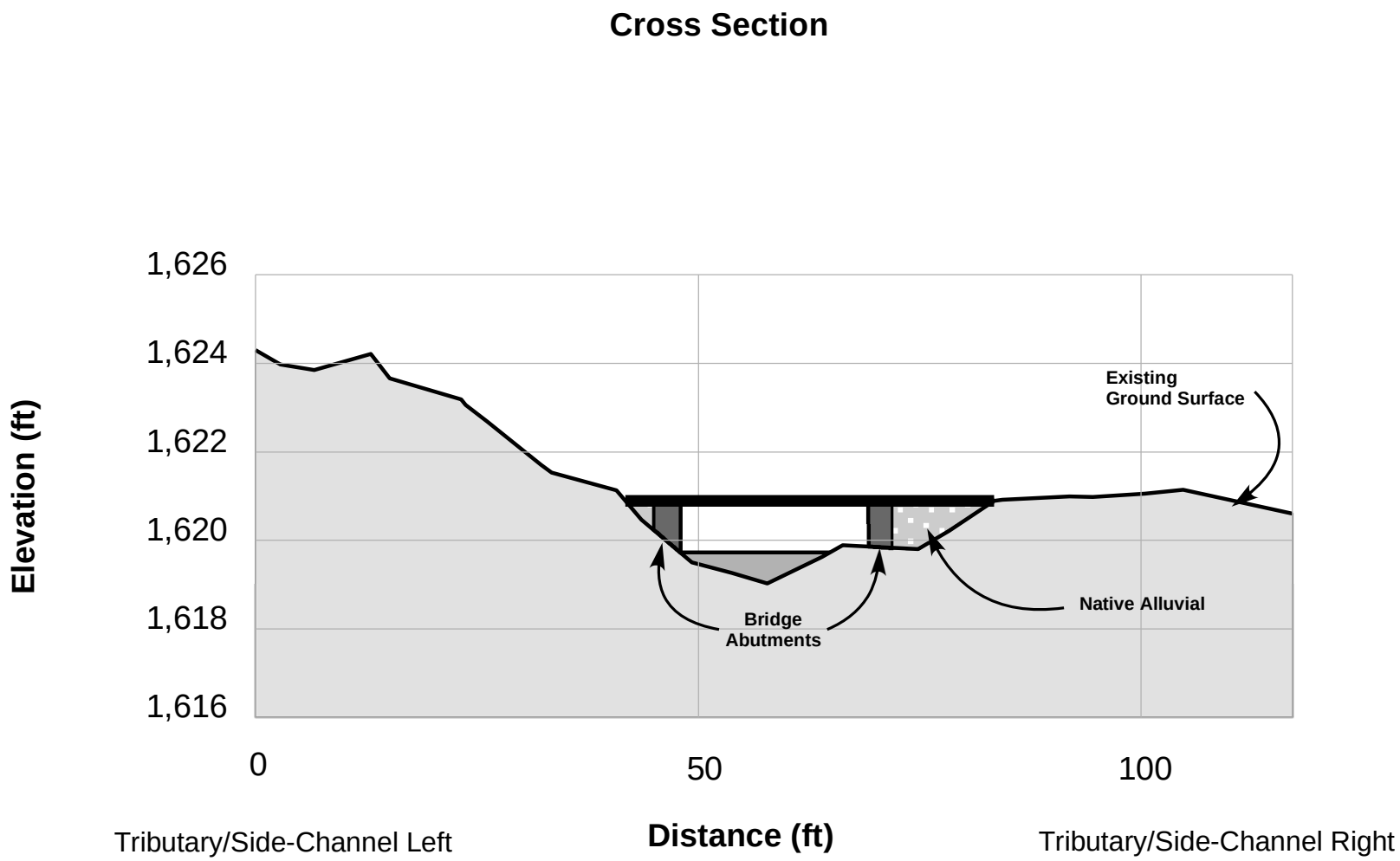
Figure 2-3g
Typical Infill Disposal

Cross Section



Note:
1) Not to scale. Shown for comparative purposes

Figure 2-3h
Typical Trinity River Crossing



Note:
1) Not to scale. Shown for comparative purposes.

2) Ramps and abutment material will be native alluvium (estimated 500 cu yds)

Figure 2-3i
Typical Bridge

River Mile 109.0

River Mile 111.2

Trinity River High-Flow Gravel Injection Projects
Lewiston, California May 2008

R:\Projects\10102 Mech Ch Rehab Trinity River 2007-2012\Master-8\Graphics* ai sgc

Figure 2.3j
Typical Gravel Injection Conveyor System

CHAPTER 3

Regulatory Framework

Chapter 3
Regulatory Framework

3.1 Permits and Approvals

In addition to CEQA and NEPA, the Proposed Project is subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities. The lead, cooperating, and responsible agencies will use this document for their permitting and approval processes. As necessary, additional discussion of these requirements is provided in Chapter 4 for each resource and topic evaluated in this document. Implementation of either of the action alternatives, as described in Chapter 2, would generally require compliance with the following federal, state, and local permit and approval processes.

3.1.1 Federal

U.S. Army Corps of Engineers

Section 404 of the Clean Water Act

Section 404 of the Clean Water Act (CWA) authorizes the U.S. Army Corps of Engineers (USACE) to issue permits for the discharge of dredged or fill materials into waters of the United States, including wetlands (33 USC 1344). The USACE is authorized to issue either individual or general permits under Section 404. Under its general permit authorization, the USACE has issued a number of permits on a nationwide basis. As long as the activity has complied with the conditions set forth in the applicable nationwide permit, there is no need for a project proponent to apply for an individual permit from the USACE. For several of these nationwide permits, the USACE requires the project proponent to submit a pre-construction notification requesting confirmation of project compliance with conditions of the nationwide permit.

Based on previous permits issued to the TRRP for other channel rehabilitation projects, it appears that the Proposed Project (or portions thereof) may be permitted under Nationwide Permit Number 27 (Wetland and Riparian Restoration and Creation Activities). To comply with the Section 404 policy that there be no net loss of wetlands, discharge into wetlands must be avoided and minimized to the extent practicable. For unavoidable impacts, compensatory mitigation could be required to replace the loss of wetland functions in the watershed.

Reclamation recently submitted a wetland delineation report pursuant to Section 404 of the CWA for the Remaining Phase 1 sites. A copy of this report is on file at the TRRP office in Weaverville.

The River and Harbors Act

The placement of structures in, under, or over "navigable waters of the United States" is also regulated by the USACE under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 401 et seq.). Projects are

permitted under either individual or general (i.e., nationwide) permits. The specific applicability of the permit types is determined by the USACE on a case-by-case basis.

National Marine Fisheries Service and U.S. Fish and Wildlife Service

Federal Endangered Species Act

Federally listed species are protected under the mandates of the Endangered Species Act (ESA) of 1973. Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species (plant or animal), or result in the destruction or adverse modification of designated critical habitat for these species (i.e. "take"). Either the NMFS or USFWS, depending on the species, may authorize "take" that is incidental to an otherwise lawful activity.

"Take" of listed species, defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or [the] attempt to engage in any such conduct," is prohibited. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

The Trinity River provides habitat for the Southern Oregon/Northern California Coasts (SONCC) Evolutionarily Significant Unit (ESU) coho salmon (O*ncorhynchus kisutch*), which is federally listed under the ESA. The designation of "critical habitat" applies to federal agencies, and prohibits federal agencies from funding, authorizing, or carrying out actions that would destroy or adversely modify "critical habitat." No critical habitat is present in the Proposed Project sites. Under the ESA, NMFS is responsible for the consultation and permitting efforts related to this species.

The northern spotted owl (*Strix occidentalis*) is federally listed as threatened, and the TRRP in conjunction with the USFS' Redwood Science Laboratory has conducted habitat assessments and site-specific protocol-level surveys for this species. The northern spotted owl was not detected during these surveys. As the responsible agency and a member of the TMC, the USFWS has concurred with the TRRP that formal consultation under Section 7 of the ESA is not required for this species with respect to proposed TRRP activities.

Sections 7 and 10(a) of the ESA provide a method for permitting an action that may result in "incidental take" of a federally listed species. "Incidental take" refers to "take" of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity. Incidental take is permitted under Section 7 of the ESA for projects on federal land or involving a federal action, and under Section 10(a) for a state or private action.

Several project activities could result in an incidental take of a species that is protected under the ESA. Therefore, non-flow measures, including the mechanical channel rehabilitation projects and sediment management activities prescribed in the ROD, were considered in the October 2000 NMFS Biological Opinion issued in response to the Trinity River Mainstem Fishery Restoration FEIS. NMFS identified the mechanical channel rehabilitation projects described in the ROD as reasonable and prudent measures. As

required by the NMFS Biological Opinion, the following conditions have been incorporated into the Proposed Project:

4a Reclamation shall meet with NMFS annually in March to coordinate during the advanced development and scheduling of habitat rehabilitation projects, including mainstem channel rehabilitation projects, sediment augmentation, and maintenance dredging to remove fine sediment from the Hamilton Ponds.

4b The USFWS and/or Reclamation shall provide for review of individual mainstem channel rehabilitation projects via the technical team ("designated team of scientists," "technical modeling and analysis team") (U.S. Fish and Wildlife Service et al. 2000) or equivalent group. The USFWS and/or Reclamation shall provide a written recommendation to NMFS concerning whether the projects are similar to those described in the Trinity River Mainstem Fishery Restoration FEIS/EIR (U.S. Fish and Wildlife Service et al. 2000) and should be covered by this incidental take statement. If the review process results in a determination that these projects and their impacts to aquatic habitat differ substantially from those described in the Trinity River Mainstem Fishery Restoration EIS/EIR (U.S. Fish and Wildlife Service et al. 2000), the technical team shall advise NMFS that additional consultation under Section 7 of the ESA is appropriate.

Reinitiating Section 7 consultation under the ESA between Reclamation and NMFS and/or between Reclamation and USFWS may be necessary if the conditions under which the Biological Opinions prepared by NMFS and USFWS change significantly. No federally listed species other than fish are expected to occur at any of the Remaining Phase 1 or Phase 2 sites.

As the TRRP has reviewed their mainstem channel rehabilitation projects and has provided NMFS their annual recommendation that planned activities are not substantively different than those described in the Trinity River FEIS, several amendments to the original October 2000 Biological Opinion have been made by NMFS. These amendments have increased TRRP construction flexibility while conforming to the original Biological Opinion's effects analyses so that no increased impacts to listed coho salmon, beyond those previously analyzed, will occur. To increase the TRRP's cost effectiveness and flexibility for implementation, it is expected that reinitiation of consultation between Reclamation and NMFS may be necessary in the future. As new restoration strategies are evaluated (e.g., working in the river channel outside of the present July 15 through September 15 work window) for impacts to coho salmon and a new Biological Opinion is written, the 2000 Biological Opinion would remain in effect and channel rehabilitation projects would continue under this coverage.

Magnuson-Stevens Fishery Conservation and Management Act

In addition to the protection salmon species receive under the ESA, they are protected under the mandates of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended in 1996. The MSA established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for

those species regulated under a federal fisheries management plan (FMP). EFH refers to those waters and substrates necessary for spawning, breeding, feeding, or growth to maturity (67 FR 2343).

In its role as the project proponent, Reclamation, a federal agency, will need to consider the impact of the Proposed Project on EFH for coho and Chinook salmon (*Oncorhynchus tshawytscha*) in the Trinity River pursuant to the Pacific Coast Salmon FMP. An EFH consultation between Reclamation and NMFS may be necessary if adverse effects to salmon or their habitat are identified.

Federal Wild and Scenic Rivers Act

Federal protection of the Trinity River, which is part of the Wild and Scenic Rivers System, is required under Section 7 of the federal Wild and Scenic Rivers Act (WSRA). The federal WSRA requires the preservation of its free-flowing condition; anadromous and resident fisheries; and outstanding geologic, wildlife, flora and fauna, historic and cultural, visual, recreational, and water quality values. The Trinity River is designated specifically for its outstandingly remarkable anadromous fishery value. Additionally, all recreational and free-flowing characteristics are to be protected under Section 7 of the federal WSRA.

The BLM generally takes responsibility for conducting Section 7 Wild and Scenic River determinations for the 40-mile reach of the Trinity River below Lewiston Dam because of an interagency agreement between the National Park Service, BLM, and USFS. However, the USFS typically completes its own Section 7 determination for activities occurring on USFS lands in the Wild and Scenic corridor, and works cooperatively with BLM on Section 7 determinations where agency management jurisdictions overlap.

A Section 7 determination that follows the Evaluation Procedure presented in the Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, Wild and Scenic Rivers Act: Section 7 is included as Appendix B.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code (USC) 470 *et seq*.), is the primary federal legislation requiring the federal government to consider the effects of its actions on historic properties. The 36 CFR Part 800 regulations that implement Section 106 of the NHPA describe how federal agencies address these effects. Historic properties are defined as those cultural resources listed, or eligible for listing, on the National Register of Historic Places (NRHP). The criteria for National Register eligibility are outlined in 36 CFR Part 60.

Reclamation has formally consulted with the Office of Historic Preservation (OHP) and the Advisory Council on Historic Preservation (ACHP). This consultation is documented in the Programmatic Agreement (PA) between the USFWS, Reclamation, BLM, HVT, the California State Historic Preservation Office (SHPO), and the ACHP regarding implementation of the Trinity River Fishery Restoration Program (Appendix D). In addition, letters requesting information regarding possible Native American concerns along the project reach were sent to tribal contacts recommended by the Native

American Heritage Commission, and field investigations were conducted by Reclamation staff in accordance with the PA.

Secretarial Order No. 3175

Secretarial Order No. 3175 states that the DOI, "when engaged in the planning of any proposed project or action, will ensure that any anticipated effects on Indian Trust resources are explicitly addressed in the planning, decision, and operational documents that are prepared for the project." This mandate was reaffirmed in a Presidential directive declaring the sovereign rights of Indian tribes and the government-to-government status of relations between the United States and recognized tribes. Accordingly, this document provides a detailed assessment of potential effects on Indian Trust resources and, consequently, on Indian tribes. Consistent with DOI policy, the analysis addresses only those tribes of the Klamath/Trinity Region that are officially recognized by the United States (Pevar 1992): the Hoopa Valley, Karuk, Klamath, and Yurok. Local unrecognized tribes include the Nor-Rel-Muk Nation and the Tsnungwe Tribe. Reclamation will ensure that these unrecognized tribes are also notified of these projects.

The Tribal Trust discussion (section 7.17) focuses principally on the Hoopa Valley and Yurok tribes, because, of the recognized Indian tribes of the Klamath/Trinity Region, these two tribes would be most directly affected by the Proposed Project. It is acknowledged, however, that the impacts are pertinent to the Karuk and Klamath people, as they share a common regional heritage with the Hoopa Valley and Yurok tribes.

U.S. Forest Service – Shasta-Trinity National Forest

Shasta-Trinity Land and Resource Management Plan

The STNF is guided by various laws, regulations, and policies that provide the framework for all levels of planning. These include Regional Guides, the Land and Resource Management Plan (LRMP), and site-specific planning documents, such as this document.

The STNF LRMP provides guidance for managing National Forest System lands in the STNF. The development of a Forest LRMP occurs within the framework of regional and national USFS planning. The LRMP includes Forest goals; Forest objectives, including Forest-wide prescription assignment by acres, outputs, and activities; and Forest Standards and Guidelines. Forest goals state the management philosophy of the LRMP, and the Forest objectives describe the purpose of the management prescriptions. The Forest-wide management prescriptions apply a management theme to specific types of land (e.g., wilderness, roaded high-density recreation). Finally, Forest Standards and Guidelines provide basic direction for implementation of management activities Forest-wide. LRMP direction specific to the Proposed Project is described in Chapter 4 of this document.

Consistent with the requirements of the LRMP, the STNF will issue a special-use permit to Reclamation for rehabilitation activities that occur on STNF lands.

Northwest Forest Plan

The STNF LRMP was amended by the 1994 Record of Decision for the Northwest Forest Plan (Final Supplemental Environmental Impact Statement for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl). As a party to the Northwest Forest Plan, the USFS is required to ensure that projects are consistent with the Aquatic Conservation Strategy (ACS).

In essence, this LRMP requires that projects authorized by the STNF be designed and implemented in a manner that maintains the existing conditions or implements actions to restore biological and physical processes within their natural range of variability.

Appendix A provides the information necessary to document project consistency with ACS objectives.

Bureau of Land Management

Northwest Forest Plan

BLM's Resource Management Plan (RMP), which is its plan for managing federal lands in Trinity County, was amended by the 1994 Record of Decision for the Northwest Forest Plan (Final Supplemental Environmental Impact Statement for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl). This amendment required preparation of the Mainstem Trinity River Watershed Analysis prior to initiating BLM activities. As a party to the Northwest Forest Plan, BLM, like the USFS, is also required to ensure that projects are consistent with the ACS. Appendix A provides the information necessary to document consistency with ACS objectives.

BLM will issue a special-use permit to Reclamation for rehabilitation activities that occur on BLM lands.

3.1.2 State of California

Regional Water Quality Control Board

Water Quality Certification/Waste Discharge Requirements

The State Water Board and the nine Regional Water Quality Control Boards have primary responsibility for the protection and enhancement of water quality in California. The Regional Water Boards adopt and implement water quality control plans (Basin Plans), which recognize the unique characteristics of each region with regard to natural water quality; past, present, and reasonably foreseeable beneficial uses; and water quality problems. The North Coast Basin Plan is designed to preserve and enhance water quality and protect beneficial uses of all regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect beneficial uses, and (iii) defines implementation programs that include specific prohibitions, action plans, and policies to achieve the water quality objectives.

Under the California Porter-Cologne Water Quality Act, "discharges of waste" require the issuance of waste discharge requirements (WDR) unless otherwise waived. WDRs apply to "State waters" where

USACE does not retain jurisdiction. These "State waters" include "isolated" wetlands without a commerce connection or significant nexus to navigable waters of the United States.

WDRs prescribe requirements, such as limitations on temperature, toxicity, or pollutant levels, as to the nature of any discharge (Wat. Code, section 13260, subd. (a)). WDRs may also specify conditions where no discharge will be permitted, (*Id.*, section 13241), and may include monitoring and reporting requirements (See *id.* section 13267, Cal. Code Regs., tit. 23, section 2230). WDRs implement the Basin Plan, taking into consideration the beneficial uses to be protected, water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisance (Wat. Code, section 13263, subd. (a).).

Impacts to isolated wetlands require mitigation at a ratio determined on a case-by-case basis. At a minimum, 1 acre of similar or "in-kind" wetland will be replaced for every acre of wetlands impacted by the project such that there will always be no net loss of wetlands throughout the state. The WDR application must be supported by a current delineation of jurisdictional waters. Authorization of a WDR permit by the Regional Water Board is contingent upon approval of a mitigation plan that demonstrates the project will not result in a net loss of wetlands.

Under section 401 of the federal CWA (33 USC sections 1251-1387), every applicant for a federal license or permit that may result in a discharge into navigable waters must provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the CWA, including water quality standards and implementation plans promulgated pursuant to section 303 (33 USC section 1313). CWA section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the CWA and with any other appropriate requirement of state law. Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project.

Since implementation of either the Proposed Project or Alternative 1 would have the potential to affect water quality in the Trinity River, Reclamation will prepare and submit to the Regional Water Board an application for CWA section 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill) to accompany its pre-construction notification sent to the USACE for CWA section 404 coverage. The Regional Water Board intends to develop and issue a general water quality certification for TRRP class of activities that contains enrollment procedures for individual TRRP projects (Cal. Code Regs., tit. 23, section 3861.) The section 401 certification is likely to impose water quality limitations and project conditions. Once a general water quality certification is issued and individual projects enrolled, discharges from the individual projects will also be regulated under State Water Resources Control Board Order No. 2003 - 0017 - DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of the general water quality certification.

Total Maximum Daily Load

The Trinity River Total Maximum Daily Load (TMDL) for sediment was established in 2001 by the United States Environmental Protection Agency (EPA) in accordance with section 303(d) of the CWA, because the State of California determined that the water quality standards for the Trinity River are exceeded due to excessive sediment. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to anadromous salmonid fish habitat, which the TRRP was designed to correct. In the Trinity River TMDL, the EPA specifies the following: implement the 2000 ROD, including flow regime; mainstem/watershed restoration; and adaptive management in its implementation recommendations. The Regional Water Board considers its proposed permitting action on TRRP measures to be early TMDL implementation of the Trinity TMDL.

NPDES Permit

Point source discharges of pollutants to surface waters require a National Pollutant Discharge Elimination System (NPDES) permit under section 402 of the CWA. An NPDES General Permit for Storm Water Discharges Associated with Construction Activities (General Permit) will also be required. The General Permit requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and to describe and ensure the implementation of Best Management Practices (BMPs) to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges.

California Department of Fish and Game

Streambed Alteration Agreement

As the Project Proponent, Reclamation may be required to obtain a Streambed Alteration Agreement from the CDFG pursuant to California Fish and Game Code Section 1602. Consistent with the input provided by CDFG for the TRRP's Hocker Flat and Canyon Creek Suite of projects, if the TRRP projects are deemed to be entirely federally funded, a Streambed Alteration Agreement is not required. If state funding is used for a TRRP project (e.g., Indian Creek) then Reclamation is required to obtain a Streambed Alteration Agreement.

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFG is responsible for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). State listed species are fully protected under the mandates of CESA. Pursuant to the requirements of CESA, any local or state agency reviewing a proposed project in its jurisdiction must determine whether any species that is state listed as endangered or threatened may be present in the project study area and determine whether the proposed project will have a potentially significant impact on any of these species.

On August 30, 2002, the California State Fish and Game Commission (Commission) determined that coho salmon in California warranted protection as a threatened species north of Punta Gorda (including the Trinity River) and as an endangered species south of Punta Gorda under CESA. The Commission directed CDFG to develop a coho salmon recovery strategy plan within one year. The CDFG completed a

plan on January 26, 2004, and the SONCC ESU coho salmon was officially state listed as threatened on August 5, 2004.

The CDFG also maintains a list of "candidate species" and lists of "species of special concern," which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species and species "watch lists," respectively. The CDFG encourages informal consultation on any proposed project that may affect a candidate species. California law (Fish and Game Code, Section 5515) identifies 10 "fully protected fish" that cannot lawfully be "taken," even with an Incidental Take Permit. None of these species is present in the Trinity River or its tributaries. California statutes also accord "fully protected" status to a number of specifically identified birds, mammals, reptiles, amphibians, and fish (California Fish and Game Code, Sections 3505, 3511, 4700, 5050, and 5515). "Fully protected" species potentially occurring in the project area include the golden eagle (*Aquila chrysaetos*) and ring-tailed cat (*Bassariscus astutus*).

Similar to the federal ESA, project-related "take" of CESA protected species incidental to otherwise lawful management activities may be authorized under Section 2081 of the Fish and Game Code of California. Reclamation, as the Project Proponent, will likely be required to obtain a CESA incidental take authorization under Fish and Game Code Section 2081(b) for one or more of the Remaining Phase 1 or Phase 2 sites. As with the Streambed Alteration Agreement, the CDFG has determined that it has the authority to issue a CESA incidental take authorization on this project based on the activities that occur on lands managed by the state. Under CESA, and upon concurrence from NMFS that its Biological Opinion and an incidental take statement for "take" of listed SONCC ESU coho salmon are adequate (pursuant to the federal ESA), Reclamation may request a CESA Consistency Determination from the Director of the CDFG, pursuant to Section 2080.1 of the California Fish and Game Code. Within 30 days after receipt of the Consistency Determination request, the Director of the CDFG shall determine whether the federal incidental take statement is consistent with CESA. If it is determined to be consistent with CESA, no further authorization or approval is necessary under CESA. If the Director of the CDFG determines that the federal incidental take statement is not consistent, then Reclamation will be required to obtain a take permit pursuant to California Fish and Game Code Section 2081(b).

Compliance with this section of the code also requires that the impacts of the project on coho salmon be minimized and fully mitigated. To facilitate CDFG's CESA compliance process, Appendix H has been included in this document. This appendix provides a full discussion of the mitigation measures specific to coho salmon.

California Department of Transportation

The California Department of Transportation (Caltrans) requires issuance of an encroachment permit for trucks and other project-related traffic to use SR 299 and SR 3 under certain circumstances. If rehabilitation activities are proposed in a Caltrans Right-of-Way (ROW), an encroachment permit may be required. Additionally, if project-related traffic could affect the visibility, traffic patterns, or the flow of traffic on SR 299 or SR 3 in a negative manner, an encroachment permit would be required.

Office of Historic Preservation

California Public Resources Code sections 21083.2 and 21084.1 require public agencies to consider the effects of their actions on historical resources and unique archaeological resources. Historical resources are defined as any cultural resource listed on, or determined eligible for listing on, the California Register of Historical Resources (CRHR) (California Public Resources Code Section 21084.1 and California Environmental Quality Act (CEQA) Guidelines Section 15064.5, subds. (a) and (b)). The CRHR includes cultural resources listed, or formally determined eligible for listing, on the NRHP as well as some California State Landmarks and Points of Historical Interest. A unique archaeological resource is defined as an artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it meets the criteria for listing on the CRHR and the NRHP pursuant to California Public Resources Code, Section 21083.2, Subd. [g].

The public agency has a responsibility to assess whether the actions of a project will cause a substantial adverse change in the significance of a historic resource or unique archaeological resource pursuant to California Public Resources Code Section 21084.1. If a project will adversely affect historic resources or unique archaeological resources, the agencies will resolve those affects in consultation with the Office of Historic Preservation. Additionally, California Public Resources Code Section 5024 requires consultation with the OHP when a project may affect historical resources located on state-owned land.

As noted above, CEQA also requires lead agencies to consider whether projects will affect "unique archaeological resources." California Public Resources Code Section 21083.2, subdivision [g], states that "'unique archaeological resource' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,

2. has a special and particular quality such as being the oldest of its type or the best available example of its type, or

3. is directly associated with a scientifically recognized important prehistoric or historic event or person" (California Public Resources Code, Section 21083.2, subd. [g]).

3.1.3 Local

Trinity County

Zoning Ordinance

The Trinity County Floodplain Management Ordinance (Section 29.4 of the County Zoning Ordinance) requires a Floodplain Development Permit for projects that would alter the Trinity River floodplain on private lands within the jurisdiction of Trinity County. This permit requires that a registered professional engineer or architect certify that construction or replacement of bridges, roadways, and bank slope protection devices will not adversely affect the flood-carrying capacity of any altered portion of the

watercourse, and will not cumulatively raise the 100-year floodplain elevations by more than 1 foot in the project area. The ordinance also requires notification of adjacent communities, CDFG, USACE, the Regional Water Board, and DWR prior to any alteration or relocation of a watercourse, and the submission of evidence of such notification to the Federal Insurance Administration and FEMA.

The hauling of loads that exceed weight, height, or width limits on Trinity County roads (such as hauling heavy equipment or oversized bridge components) requires an encroachment permit from the Trinity County Department of Transportation. Work that will modify or encroach on County roads, including efforts associated with the rehabilitation activities, may require a Trinity County encroachment permit.

Water Quality Control Ordinance

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

Hoopa Water Quality Plan

The Hoopa Valley Tribe's Water Quality Control Plan was approved by the EPA over a period of several years. Most recently in 2008, the EPA approved amendments to the Plan addressing nutrients, temperatures, and related criteria in both the Trinity River and Klamath River where they cross through the Hoopa Valley Reservation. Designated uses for the Trinity River include ceremonial and cultural use, as well as fish habitat. Criteria such as nutrients and temperature are key to the Tribe's efforts to maintain and restore natural populations of salmon and steelhead.

3.2 Other Requirements

The following section provides an overview of the principal environmental statutes, not described above, that establish the regulatory setting that will be used to assess the impacts of rehabilitation activities at Remaining Phase 1 and Phase 2 sites.

3.2.1 U.S. Environmental Protection Agency

California Toxics Rule

Under Section 303(c)(2)(B) of the CWA, states must adopt numeric criteria for the priority toxic pollutants listed under Section 307(a) if those pollutants could be reasonably expected to interfere with the designated uses of state waters. The California Toxics Rule (CTR) (40 CFR 131, 2000) establishes a human health criteria for mercury in the water column of 0.050 parts per billion (ppb) of total recoverable mercury for drinking water supplies and aquatic organisms and 0.051 ppb for waters that are not drinking water supplies. These criteria are derived from a calculated reference dose, based on concentrations of mercury below which extra risk for neurological damage should not occur. The federal criteria are legally

applicable to inland surface waters, enclosed bays, and estuaries in the State of California. The state is also under the jurisdiction of the National Toxics Rule promulgated in 1992 for certain waters and pollutants.

Federal Clean Air Act

The 1977 federal Clean Air Act (CAA) requires the EPA to identify National Ambient Air Quality Standards (NAAQS) to protect the public from exposure to airborne pollutants that are known to be hazardous to human health. The EPA is responsible for setting federal air quality standards, which are monitored and enforced through local air quality districts. The CAA mandates the identification of areas not meeting ambient air quality standards and requires the preparation of air quality plans to attain the standards.

3.2.2 U.S. Fish and Wildlife Service

Bald and Golden Eagle Protection Act

This law, originally passed in 1940, provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 USC 668(a); 50 CFR 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 USC 688(c); 50 CFR 22.3). A violation of this act can result in a fine, imprisonment, or both.

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). A diverse assemblage of bird species use habitat associated with the Trinity River corridor, and most of these species are protected under the MBTA.

3.2.3 Federal Noxious Weed Act

Although the Plant Protection Act superseded and repealed most of the Federal Noxious Weed Act of 1974, Section 15 of this act remains intact and requires federal land management agencies to develop and establish a management program for control of undesirable plants that are classified under state or federal law as undesirable, noxious, harmful, or poisonous on federal lands under the agency's jurisdiction (7 USC 2814 (a)). The act also requires federal agencies to coordinate with state and local agencies in the management of undesirable plants. The TRRP has included measures to control the spread of noxious weeds within the boundaries established for the Remaining Phase 1 and Phase 2 sites.

3.2.4 Executive Orders

Executive Order 11990 (Wetlands)

Executive Order 11990 is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. The order requires federal agencies to follow "avoidance-mitigation-preservation" procedures and provide the opportunity for public input before proposing new construction in wetlands and requires federal agencies to avoid impacts on wetlands where practicable. Section 4.7 of this document includes procedures developed by the TRRP to mitigate for impacts on wetlands.

Federal Executive Order 11988 (Floodplain Management)

Executive Order 11988 requires federal agencies to prepare floodplain assessments for proposed actions located within or affecting floodplains. If an agency proposes to conduct an action in a floodplain, it must consider alternatives to avoid adverse effects to, and incompatible development of, the floodplain.

If the only practicable alternative involves siting of structures in a floodplain, the agency must minimize potential harm to or within the floodplain and explain why the action is proposed in the floodplain. As discussed in section 4.4, Water Resources, any implemented project will not be allowed to increase the Base Flood elevation (100-year flood).

Executive Order 12373 for State, Area-Wide, and Local Plan and Program Consistency

Agencies must consider the consistency of a proposed action with approved state and local plans and laws. In accordance with Executive Order 12372, this document has been prepared with input from the cooperating, responsible, and trustee agencies. Additionally, Trinity County policies that would affect, or be affected by, any of the alternatives are discussed below and in section 4.2, Land Use. During the public review period, the document will be circulated to the appropriate state and local entities to satisfy review and consultation requirements.

Federal Executive Order 12898 (Environmental Justice)

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies, and activities on minority and low-income populations. Federal agencies are required to provide opportunities for input in the NEPA process by affected communities and to evaluate significant and adverse effects of proposed federal actions on minority and low-income communities during the preparation of NEPA documents. The NEPA scoping process can be used to solicit information on the concerns of minority and low-income populations. If a proposed federal action will not result in significant adverse impacts on minority and low-income populations, the environmental document must describe how Executive Order 12898 was addressed during the NEPA process. Upon issuance of this draft, the public review process will include a statement from Reclamation that it is soliciting input from the public regarding potential adverse impacts of the Proposed Project on minority and low-income populations.

Executive Order 13007 for Indian Sacred Sites on Federal Land

Executive Order 13007 provides that each federal agency with statutory or administrative responsibility for management of federal lands shall, to the extent practicable and as permitted by law, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and shall avoid adversely affecting the physical integrity of such sacred sites. The potential for any such sites to occur within the boundary established for the project is discussed in Section 4.10. The preliminary findings indicate the Proposed Project will not have an adverse effect on Indian Sacred Sites on federal land.

Federal Executive Order 13112 (Invasive Species)

Executive Order 13112 requires federal agencies to use relevant programs and authorities to:

- prevent the introduction of invasive species;
- detect and control populations in a cost-effective and environmentally sound manner;
- provide for restoration of native species;
- promote public education on invasive species; and
- not authorize, fund, or carry out actions to cause or promote the spread or introduction of invasive species.

Preventive measures incorporating these requirements will be considered during the environmental and restoration phases of the project.

Federal Executive Order 13443 (Hunting Heritage and Wildlife Conservation)

Executive Order 13443 requires federal agencies with relevant programs and authorities related to public land management, outdoor recreation, and wildlife management to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitats. Specifically, federal agencies shall, consistent with agency missions:

- evaluate and/or implement agency actions that expand and enhance hunting opportunities for the public;
- consider the economic and recreational values of hunting in agency actions, as appropriate;
- manage wildlife and habitat on public lands in a manner that expands and enhances hunting opportunities;
- work collaboratively with state governments to manage and conserve game species consistent with state authorities;
- establish short and long term goals, in cooperation with state and tribal governments, to foster healthy and productive populations of game species;
- ensure that agency plans and actions consider programs and recommendations for comprehensive planning efforts for big game and upland game birds; and

- seek the advice of state and tribal fish and wildlife agencies with respect to the foregoing federal activities.

3.2.5 California Department of Fish and Game

California Native Plant Protection Act

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

Birds of Prey

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

Migratory Birds

The State Fish and Game Code Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. Under Fish and Game Code Section 3513, the CDFG may consider impacts similar to those described above under the MBTA as a significant impact.

3.2.6 California Wild and Scenic Rivers Act

Patterned after the federal WSRA, the California WSRA was enacted in 1972 to preserve those rivers within the state designated as having extraordinary scenic, recreation, fishery, or wildlife values. Under this act, the Klamath River and its tributaries, including the mainstem Trinity River, are subject to similar criteria and definitions of purpose defined by the federal WSRA. However, while the federal WSRA applies to public lands located within approximately 0.25 mile on either side of a river's channel and requires development and implementation of a river protection management plan, the state WSRA provides protection only to the first line of permanent riparian vegetation and does not require development of a management plan.

Under the California WSRA, the Trinity River is designated as "recreational" from 100 yards below Lewiston Dam to the confluence with Cedar Flat Creek (California Department of Transportation 2007). This designated segment extends well below the reach influenced by the TRD. The California Public Resources Code (5093.53[b]) defines "scenic rivers" as being "those rivers or segments of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads." "Recreational rivers" are defined in the California

Public Resources Code (5093.53[c]) as being "those rivers or segments of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

Public Resources Code section 5093.61 provides: "All departments and agencies of the state shall exercise their powers granted under any provision of law in a manner that protects the free-flowing state of each component of the system and the extraordinary values for which each component was included in the system." Any state agency permitting a TRRP measure must include a finding that the project will not adversely affect the values for which the river was listed. Consultation with the Resources Agency is required only for the construction of a dam, reservoir, diversion, or other water impoundment facility. (Public Resources Code, section 5093.56.) Even though the TRRP does not contemplate impoundment facilities, the Regional Water Board intends to contact the Resources Agency before including any findings in its project approval.

3.2.7 California Air Resources Board

The California Clean Air Act (CCAA) establishes regulations to protect the public from exposure to airborne pollutants that are known to be hazardous to human health. The California Environmental Protection Agency Air Resources Board is responsible for setting state air quality standards, which are monitored and enforced through local air quality districts. The CCAA mandates the identification of areas not meeting ambient air quality standards and require the preparation of air quality plans to attain the standards.

The North Coast Unified Air Quality Management District (NCUAQMD) establishes policies, regulations, and permit procedures for Humboldt, Del Norte, and Trinity counties.

3.2.8 Hazardous Waste and Hazardous Materials

Several federal and state laws govern hazardous materials and hazardous waste. Under the CalEPA, the Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California as required by the federal Resource Conservation and Recovery Act (RCRA). The law imposes a "cradle to grave" regulatory system for handling hazardous wastes in a manner that protects human health and the environment.

Several federal and state laws govern the consumption of potentially hazardous or toxic materials. In the project area, fish could contain toxic levels of methylmercury. Human health water quality criteria are numeric values for pollutant concentrations in ambient waters and edible tissues that the EPA established to protect human health. Because consumption of contaminated fish tissue is the primary route of human exposure to methylmercury, the EPA expresses this water quality criterion as a fish tissue value (0.3 milligram methylmercury/kilogram fish (ppm) wet weight). The Food and Drug Administration (FDA) is also responsible for establishing safe consumption levels of food products and issues consumption advisories. In 2003, the FDA revised its fish consumption advisory to equal the EPA standard. The California Office of Environmental Health Hazard Assessment (OEHHA) is the state agency responsible

for issuing state health advisories associated with the consumption of materials that could be hazardous to human health.

3.2.9 Trinity County General Plan

The Trinity County General Plan (Trinity County 2003) contains goals, objectives, and policies designed to guide the future physical development of the county based on current conditions. The General Plan, which applies to the entire county, includes community plans for Lewiston (Trinity County 1986), Douglas City (Trinity County 1987a), and Junction City (Trinity County 1987b). Trinity County General Plan goals, objectives, and policies are discussed in section 4.2, Land Use, as applicable.

3.3 Lead and Participating Agencies

As stated previously, Part 2 of this document incorporates the Master EIR by reference in its entirety. As an integrated, multi-purpose document, it is responsive to the efforts of the lead, responsible, and cooperating agencies to ensure that it address the applicable laws, policies, and regulations. At the same time, it incorporates the input provided during the scoping process in conjunction with the extensive level of consultation and coordination between the agencies.

The Regional Water Board is the CEQA lead agency for the Master EIR and the EIR portion of this EA/EIR; Reclamation is the NEPA lead agency for the EA portion of the EA/EIR. The cooperating agencies involved with the preparation of this document are BLM, STNF, HVT, YT, and the TCRCD. The primary responsible and trustee agencies are USACE, USFWS, NMFS, DWR, CDFG, the Regional Water Board, Caltrans, and Trinity County.

3.4 Project Scoping

Section 1.7 of this document provides a summary of the public scoping process that has been completed to date. While no new significant issues emerged during the scoping process, it did affirm that the issues addressed programmatically in the Master EIR and more specifically in the EA/EIR are germane to the Proposed Project. An outcome of the scoping process was expansion of the role of the HVT and YT as cooperating agencies under NEPA.

3.4.1 List of Agencies and Organizations Contacted

Since November 2007, the TRRP has hosted a number of meetings that ultimately resulted in the development of the Proposed Project and Alternative 1 as described in Chapter 2. In addition to in-house design provided by TRRP staff, the HVT and YT are represented on the interagency design team for the Remaining Phase 1 sites.

During the fall, 2007, an initial project-planning meeting was held at the TRRP office in Weaverville, California, to discuss the nature of the Proposed Project with technical staff representing the TMC.

The Regional Water Board, as the CEQA lead agency, submitted a Notice of Preparation (NOP) to the State of California, Governor's Office of Planning and Research, State Clearinghouse for the Proposed Project on March 26, 2008. Upon receipt of the NOP, the State Clearinghouse assigned the number SCH# 2008032110 for tracking purposes.

Following is a list of agencies and organizations that were consulted during the preparation of this document:

- California Air Resources Board
- California Department of Fish and Game
- California Department of Transportation
- California Division of Mines and Geology
- California Highway Patrol
- California Native American Heritage Commission
- California State Lands Commission
- California Resources Agency
- California Water Quality Control Board, North Coast Region
- National Marine Fisheries Service (Arcata)
- Trinity County Building and Development Services, Environmental Health Division
- Trinity County General Services Department
- Trinity County Transportation Department
- Trinity County Sheriff's Office
- U.S. Army Corps of Engineers (San Francisco District – Eureka Field Office)
- U.S. Department of Agriculture, Forest Service (Shasta-Trinity National Forest)
- U.S. Department of Transportation, U.S. Coast Guard
- U.S. Environmental Protection Agency
- U.S. Department of Interior, Fish and Wildlife Service (Arcata Field Office)
- U.S. Department of Interior, Bureau of Land Management