TRINITY RIVER MECHANICAL CHANNEL REHABILITATION PROJECT

LEWISTON 1-4 AND DARK GULCH SITES

Delineation of Waters of the U.S. Including Wetlands

November 2005

North State Resources, Inc

Trinity River Restoration Program
Restore • Adapt • Improve

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

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NOVEMBER 2005

Prepared for:
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Delineation of Waters of the United States, Including Wetlands

1. INTRODUCTION

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) is proposing river rehabilitation activities between Lewiston Dam and the North Fork Trinity River as part of the Trinity River Restoration Program (TRRP) in Trinity County, California. Section 404 of the Federal Clean Water Act (1972) requires a diagnostic environmental characterization of a proposed project area to identify vegetative, hydrologic, and soils traits indicative of wetland habitats before the project begins. The U.S. Army Corps of Engineers (Corps) is authorized to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands.

In accordance with Corps methodology, as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), North State Resources, Inc. (NSR) conducted a wetland delineation covering five sites proposed for rehabilitation activities: Lewiston sites 1 through 4, and Dark Gulch.

2. PROJECT BACKGROUND AND LOCATION

a) Project Background: The operation of the Trinity River Division (TRD) of the Central Valley Project (CVP) is the primary influence on the regional hydrology. The TRD consists of a series of dams, tunnels, and power plants that export water from the Trinity River basin to the Sacramento River basin. Trinity and Lewiston dams currently regulate Trinity River flows below River Mile (RM) 112. With a capacity of 2.4 million-acre-feet (maf), Trinity Lake is the largest component of the TRD. Releases from Trinity Lake are re-regulated in Lewiston Reservoir prior to release downstream into the Trinity River. Lewiston Reservoir also acts as a forebay for the transbasin export of water into Whiskeytown Reservoir via the Clear Creek Tunnel. Lewiston Dam marks the upstream limit of anadromous salmonids in the Trinity River.

The Trinity River drains a watershed of approximately 2,965 square miles; about one-quarter of this area is above Lewiston Dam. 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. The Trinity River is the largest tributary to the Klamath River. The mainstem Trinity River flows a total of 170 miles from its headwaters to its confluence with the Klamath River at Weitchpec, 43.5 miles upstream from the Pacific Ocean.

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

Since operation of Lewiston Dam began in 1964, an average of 74 percent of the river's flow has been exported annually. In recent years (1985–1997), annual exports have decreased to an average of 732,400 acre-feet (af). Conversely, post-dam Trinity River flows at Lewiston were as low as 10 percent of pre-dam levels for the first 10 years of dam operations. Most recently, the Ninth Circuit Court of Appeals has upheld delivery of the 2000 Trinity River Mainstem Fishery Restoration Record of Decision (ROD) flows. ROD flows from Lewiston dam are now delivered based on water year type in the Trinity River watershed (e.g., critically dry to extremely wet water year allocations) and these regulated flows now constitute the greatest part of the hydrological environment for the present day Trinity River. Modeling of these ROD flows is the basis for the described riverine boundaries of waters of the United States included within this delineation report.

The Trinity River rainy season, as defined by the North Coast Region Water Quality Control Board, lasts from October 15 through April 15, when over 90 percent of the annual precipitation falls. During the majority of this period, Trinity River flow and flooding are regulated by the dams upstream of Lewiston.

b) Project Location: The five proposed channel rehabilitation sites are located along an approximately 5-mile reach of the mainstem Trinity River near the community of Lewiston, Trinity County, California. The Lewiston 1 and Dark Gulch sites are separated from the others by non-project areas while the three Lewiston Sites (Lewiston 2-4) are directly adjacent to one another. The general location of the five sites is shown in Figure 1. The Environmental Study Limits (ESLs) for the five sites are shown on Figure 2, the Project Location Map.

Lewiston 1

The Lewiston 1 channel rehabilitation site (Lewiston 1) begins at RM 111.50 downstream of the Trinity River Hatchery and extends downstream to RM 110.59 where it intersects with the up stream Lewiston 2 boundary. It is found on the *Lewiston, California* 7.5-minute U.S. Geological Survey (USGS) quadrangle map, Township 33 North, Range 8 West, Sections 8, 17, and 18, Mount Diablo Base and Meridian (MDB&M), 040° 43' 18" North latitude by 122° 48' 16" West longitude.

Lewiston 2

The Lewiston 2 channel rehabilitation site (Lewiston 2) begins at RM 110.59 and extends downstream to RM 110.37 along the Trinity River. It is found on the *Lewiston, California* 7.5-minute USGS quadrangle map, Township 33 North, Range 8 West, Sections 17, and 18, MDBM, 040° 42' 55" North latitude by 122° 48' 18" West longitude.

Lewiston 3

The Lewiston 3 channel rehabilitation site (Lewiston 3) shares a common boundary with the Lewiston 2 site. It begins at RM 110.37 and extends downstream to RM

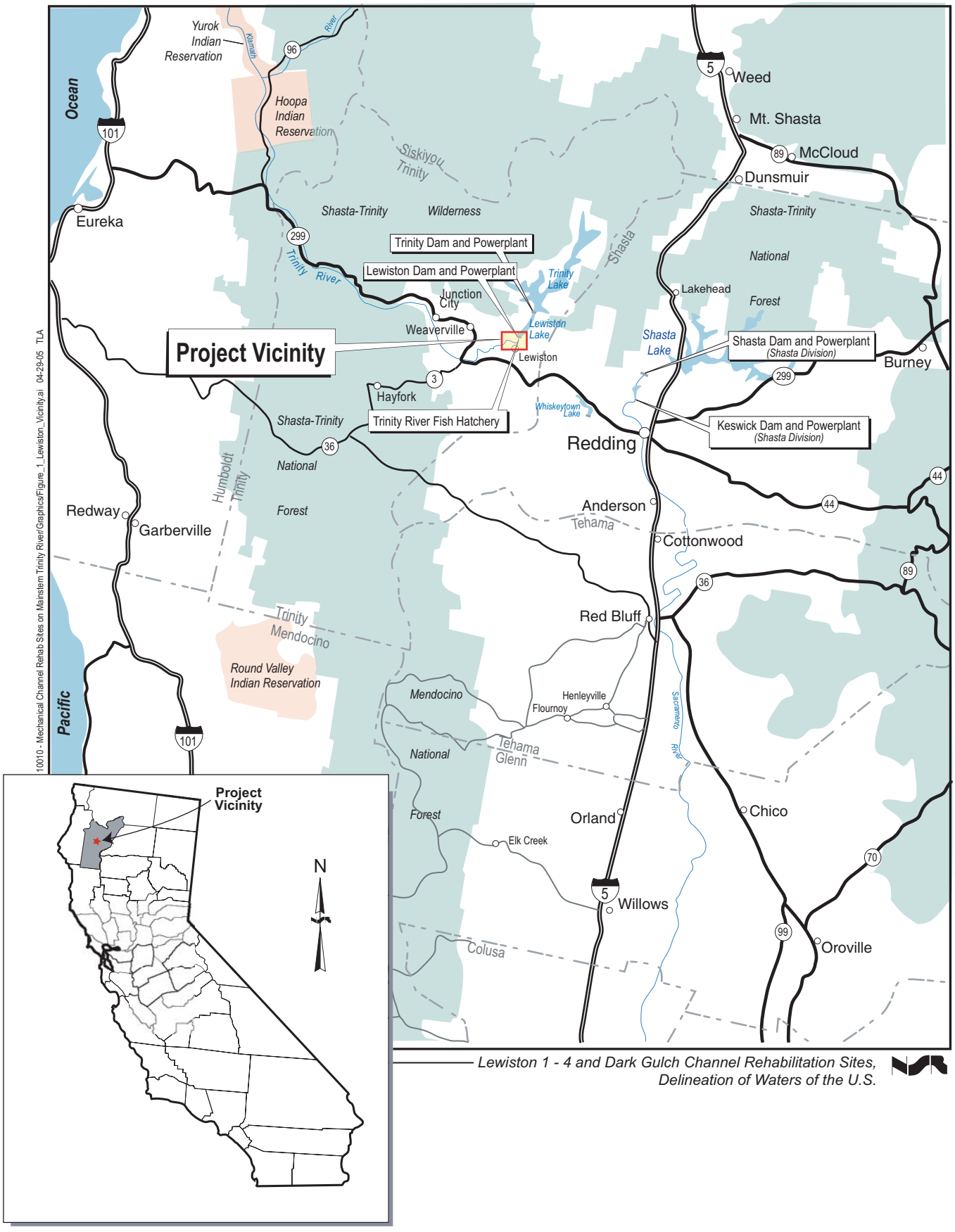
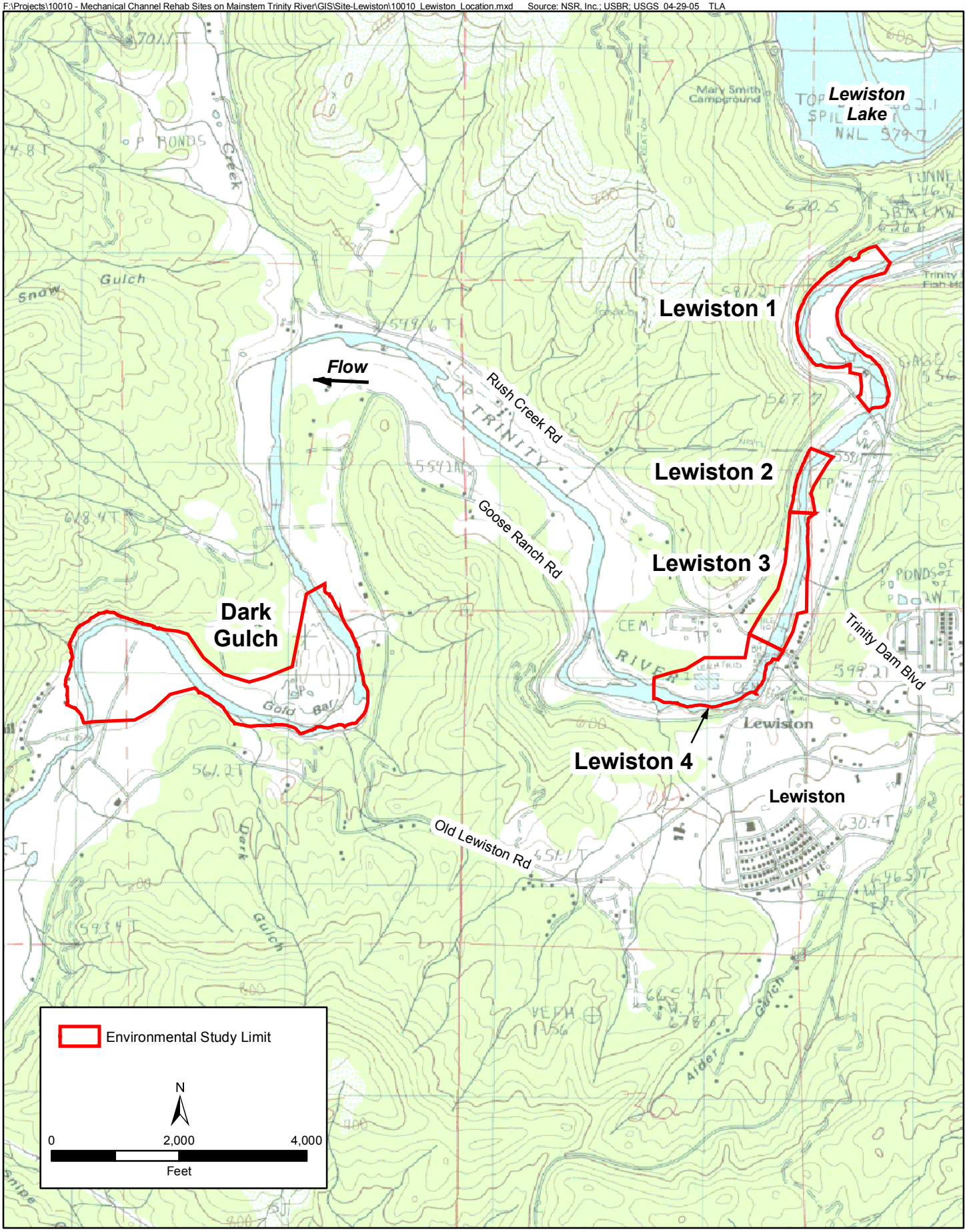


Figure 1. Project Vicinity



Lewiston 1 - 4 and Dark Gulch Channel Rehabilitation Sites, Delineation of Waters of the U.S.

Figure 2. Project Location

109.93 along the Trinity River. It is found on the *Lewiston, California* 7.5-minute USGS quadrangle map, Township 33 North, Range 8 West, Sections 18 and 19, MDBM, 040° 42' 40" North latitude by 122° 48' 20" West longitude.

Lewiston 4

The Lewiston 4 channel rehabilitation site (Lewiston 4) shares a common boundary with Lewiston Site 3. It begins at RM 109.93 and extends downstream to RM 109.45 along the Trinity River. It is found on the *Lewiston, California* 7.5-minute USGS quadrangle map, Township 33 North, Range 8 West, Section 19, MDBM, 040° 42' 20" North latitude by 122° 48' 34" West longitude.

Dark Gulch

The Dark Gulch channel rehabilitation site (Dark Gulch) begins at RM 106.70 and extends downstream to RM 105.50 along the Trinity River. It is found on the *Lewiston, California* 7.5-minute USGS quadrangle map, Township 33 North, Range 9 West, Sections 13, 23, and 24, MDBM, 040° 42' 22" North latitude by 122° 50' 22" West longitude.

c) **Acreage**: The five ESLs encompass approximately 220.99 acres. The acreage for each proposed channel rehabilitation site is as follows:

Lewiston 1: 35.34 acres

Lewiston 2: 7.38 acres

Lewiston 3: 21.27 acres

Lewiston 4: 26.93 acres

Dark Gulch: 130.07 acres

d) **Proximity to Major Highways and Streets**: All five of the channel rehabilitation sites are in the general vicinity of Lewiston, California. California State Route (SR) 299 West connects the Central Valley with the north coast communities of California. The community of Lewiston can be accessed via SR 3 to Rush Creek Road from the west, or from the Lewiston Road exit on SR 299, approximately 35 miles west of Redding, California. The following sections provide directions to access each site.

Lewiston 1

The Lewiston 1 site spans both sides of the Trinity River. This site is accessible from either Lewiston Road or Hatchery Road. Access to the site can be achieved by parking at the designated location upstream of the new Lewiston Bridge and walking upstream toward the Trinity River Hatchery.

Lewiston 2

The Lewiston 2 site encompasses both banks of the Trinity River. The primary access to this site is via River Oaks Resort, downstream of the new Lewiston Bridge. Although the site includes the bank opposite the road, the steep terrain and thick vegetation on that bank make access difficult. Parking is available via the River Oaks Resort with written

permission from Reclamation. Depending on flow conditions, the site may be accessible by parking at the location described for Lewiston 1 site and walking downstream.

Lewiston 3

The Lewiston 3 site encompasses both banks of the Trinity River. It is located directly downstream of Lewiston 2 site and continues downstream to the Old Lewiston Bridge. A public recreation area managed by the California Department of Fish and Game provides parking and immediate access to the site on the northwest (river right) bank. Access on the left bank of the river is limited by the terrain and vegetation.

Lewiston 4

The Lewiston 4 site is located on the both sides of the Trinity River adjacent to Goose Ranch Road. The primary access to this site is via Rush Creek Road, on the right bank of the Trinity River. Parking is available in the commercial campground adjacent to the Trinity River.

Dark Gulch

The Dark Gulch site encompasses both banks of the Trinity River in the general vicinity of the Bucktail subdivision. This site is accessed via Goose Ranch Road to Bucktail Road. Parking is available at the Bureau of Land Management (BLM) recreation site on either side of Bucktail Bridge.

e) USGS Hydrologic Unit: The ESLs are located within USGS Hydrologic Map Unit Number 18010211.

3. ENVIRONMENTAL SETTING

a) Current/Recent Land Use: The Trinity River basin encompasses the majority of Trinity County and the easternmost portion of Humboldt County. Topography is predominantly mountainous. The basin is heavily forested with little available farming area. Two scenic byways, SR 299 and SR 3, cross the county. The area's numerous lakes and rivers provide many recreational opportunities, including fishing and boating. Most of the Hoopa Valley Indian Reservation is within the basin. 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. Private uses along the Trinity River are generally limited to scattered residential and commercial development. SR 299 is the primary travel corridor through Trinity County, connecting the Central Valley with the coastal communities of Humboldt County.

The Trinity River basin is sparsely populated. Trinity County had a population of 13,116 in 2001 (United States Census Bureau 2002). Throughout the watershed, residential, commercial, and industrial uses tend to be concentrated on relatively flat areas near the Trinity River or its tributaries, as typified by the population centers of Weaverville, Hayfork, Lewiston, Willow Creek, and Hoopa. Together, these communities house two-thirds of the basin's approximately 15,000 people.

Land within the five proposed channel rehabilitation sites is predominantly under public ownership. The U.S. Department of Agriculture, Forest Service (USFS) manages the vast majority of Lewiston 1, the California Department of Fish and Game manages nearly all of

the lands within the Lewiston 2-4 sites, and the BLM holds approximately 1/3rd of the lands within the Dark Gulch site. The remainder of the ESLs is made up of private holdings.

b) **Site Elevation**: The approximate elevation of each of the sites proposed for channel rehabilitation activities is as follows:

Lewiston 1: 1,815–1,878 feet msl

Lewiston 2: 1,808–1,863 feet msl

Lewiston 3: 1,805–1,863 feet msl

Lewiston 4: 1,801–1,822 feet msl

Dark Gulch: 1,748–1,788 feet msl

c) **Climate**:

Type: Mediterranean with moderate winters and hot, dry summers.

Precipitation: Approximately 38 inches annually, most of which falls between October 1 and April 30 (Western Regional Climate Center 2004).

Air temperature: The average annual air temperature is approximately 53 degrees Fahrenheit (º F). The average January high temperature is approximately 46º F, and the average July high temperature is approximately 93º F (Western Regional Climate Center 2004).

Growing season: Approximately 130 days (assume May 24 to September 26).

d) **Site Topography/Landscape**: The five sites share similar landscape and topographical features. All of the sites are immediately adjacent to the Trinity River and are generally flat with the exception of berms and road fill that currently confine the channel. Dredger tailing piles are predominant at the Dark Gulch site; isolated dredger tailing piles occur at the other sites.

e) **Hydrology/Hydrologic Features**: The hydrology of the five sites is influenced almost exclusively by the mainstem of the Trinity River and associated operation of the TRD. To a lesser extent, runoff from adjacent roads and hillsides following precipitation events also affects the hydrology within each of the sites. Rush Creek, which joins the Trinity River between the Lewiston 4 and Dark Gulch sites, is a source of sediment and flow into the Trinity River.

f) **Soils**: Soils within the ESL are described in the *Soil Survey of Trinity County, California, Weaverville Area* (U.S. Department of Agriculture 1998) and the *Soil Survey of Shasta-Trinity Forest Area* (U.S. Department of Agriculture and Soil Conservation Service in cooperation with The Regents of the University of California 1980). Soil survey maps of the ESLs are contained in Appendix A. Fourteen soil map units were identified within the ESLs. The Atter soil unit (map units 102) and the Xerofluvents-Riverwash complex (map unit 217) are considered hydric soils. The Haploxerolls soil unit (map unit 147) is not considered a hydric soil, but may contain hydric inclusions in the form of mining ponds (U.S. Department of Agriculture 1992). Following is a brief characterization of the ESL soils:

81 – Goulding family, 60 to 80 percent slopes.

This map unit consists of shallow, well drained soils that formed in material weathered from metavolcanic and metasedimentary rocks. These soils are on dissected mountain side slopes and ridgetops. The profile depth in the bedrock ranges from 10 to 20 inches. Rock fragments make up 35 to 65 percent of the profile. The surface soil is composed of 40% gravel and cobbles and the subsoil is composed of 55% gravel and cobbles. (U.S. Department of Agriculture 1980)

Soils of this type occur at the Lewiston 1 site.

120 – Holland family, deep – Holland family complex, 40 to 60 percent slopes.

This map unit consists of moderately deep and well drained soils formed in material weathered from metasedimentary, volcanic and diorite or granitic rocks. These soils exist on benches, toe slopes, dissected, and linear to broken mountain side slopes. (U.S. Department of Agriculture 1980)

Soils of this type occur at the Lewiston 1 site.

203 – Neuns family, 40 to 60 percent slopes.

This map unit consists of moderately deep and well drained soils that formed in material weathered from schist, metavolcanic and metasedimentary rocks. These soils exist on dissected linear mountain side slopes. The surface soil is composed of approximately 35-45% gravel while the subsoil is composed of about 55% gravel and cobbles. (U.S. Department of Agriculture 1980)

Soils of this type occur at the Lewiston 1 site.

351 – Xerofluvents-Riverwash association, 0 to 20 percent slopes.

This map unit consists of brownish to dark brownish soils that have formed on floodplains, fans, and terraces along streams and rivers and are subject to occasional flooding. These soils exist on level to gentle slopes. Textures range from loam fine sandy to loams and are excessively drained to well drained. The amount of coarse fragments, within the profile, varies and is without order. The subsoil is difficult to separate from the substratum, which extends to 45 inches (114.5 cm), is brown to yellowish brown, and has a very gravelly (35-45% gravel) sandy loam texture. (U.S. Department of Agriculture 1980)

Soils of this type occur at the Lewiston 1 site.

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

or medium, and the hazard of water erosion is slight or moderate. These soils are subject to flooding during prolonged, high-intensity storms. The frequency of the flooding ranges from rare to frequent. Channeling and deposition are common along streambanks. This unit serves mainly as watershed or is used as wildlife habitat or recreational areas. The Xerofluvents provide seasonal habitat for fish and wildlife. (U.S. Department of Agriculture 1998)

Soils of this type occur at the Lewiston 3 site.

147 – Haploxerolls, warm, 0 to 2 percent slopes. *This map unit is on stream terraces. These soils formed in alluvium derived from mixed rock sources. Areas are adjacent to perennial streams. Within this map unit occurs small areas of Xerofluvents and Riverwash along stream channels under woody streamside vegetation, such as willow and alder; Haysum gravelly loam, 2 to 5 percent slopes; and Carrcreek gravelly loam, 2 to 5 percent slopes. Permeability is moderately rapid or rapid. Available water capacity is low or moderate. Runoff is slow and the hazard of water erosion is slight. This unit is used for homesite development or pasture.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch, Lewiston 3, and Lewiston 4 sites.

173 – Marpa Variant-Goulding-Holkat Variant complex, 30 to 50 percent slopes. *This map unit is on mountains. This unit is 30 percent Marpa Variant gravelly clay loam, 25 percent Goulding very gravelly loam, and 25 percent Holkat Variant clay loam. Within this map unit occurs small areas of Haysum gravelly loam, 5 to 9 percent slopes; areas of a dense, clayey soil that is 20 to 40 inches deep over fractured bedrock; areas of a very gravelly clay loam that is 40 to 60 inches deep over bedrock; and areas that have slopes of less than 30 percent. The soil is moderately deep and is well drained. Permeability is slow in the Marpa Variant soil. Available water capacity is low. Runoff is rapid, and the hazard of water erosion is severe. The Goulding soil is shallow and somewhat excessively drained. Permeability is moderate in the Goulding soil. Available water capacity is very low. Runoff is rapid and the hazard of water erosion is moderate. The Holkat Variant soil is moderately deep and is well drained. Permeability is moderate in the Holkat Variant soil. Available water capacity is low. Runoff is rapid and the hazard of water erosion is severe. The Marpa Variant soil is used for timber production. The Goulding and Holkat Variant soils are used as watershed areas, recreational areas, or wildlife habitat. Careful management of watershed areas, recreational areas, and wildlife habitat is needed in the Marpa Variant soils to keep surface erosion to a minimum and to maintain the quality of the runoff.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Lewiston 2 and Lewiston 3 sites.

179 – Musserhill gravelly loam, 15 to 30 percent slopes. *This map unit is moderately deep, well drained and is on hills. Within this map unit occurs small areas of Crefork clay loam, 15 to 30 percent slopes; Weaverville clay loam, 15 to 30 percent slopes, under conifers; areas of very deep very gravelly clay loam; and areas of Xerofluvents along stream channels under woody streamside vegetation, such as willow and alder. Permeability is moderately slow in the Musserhill soil. Available water capacity is low. Runoff is rapid and the hazard of water erosion is moderate. This unit is used for homesite development or wood products.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch site.

186 – Pardaloe-Goulding complex, 50 to 75 percent. *This map unit is on mountains, mostly on north facing slopes. This unit is 45 percent Pardaloe very gravelly loam and 30 percent Goulding very gravelly loam. The Pardaloe soils occur on mostly sheltered slopes and the Goulding soils occur mostly on exposed slopes and spur ridges. Within this mapping unit occurs small areas of Brownbear very gravelly loam; areas of Rock outcrop; Bamtush extremely gravelly loam; Weaverville loam, 30 to 50 percent slopes, on broad ridgetops and old landslide deposits; and Xerofluvents along stream channels under conifers and woody streamside vegetation. The Pardaloe soil is deep or very deep and is well drained. Permeability is moderate in the Pardaloe soil. Available water capacity is low. Runoff is very rapid and the hazard of water erosion is severe. The Goulding soil is shallow and somewhat excessively drained. Permeability is moderate in the Goulding soil. Available water capacity is very low. Runoff is very rapid and the hazard of water erosion is severe. The Pardaloe soil is used for timber production and the Goulding soil is used as watershed land.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Lewiston 2 and Lewiston 3 sites.

198 – Tallowbox-Minersville complex, 30 to 50 percent slopes. *This map unit is in mountains. This unit is 60 percent Tallowbox gravelly coarse sandy loam and 20 percent Minersville sandy loam. The Tallowbox soil is on exposed slopes dominated by ponderosa pine and oaks and the Minersville soil is on sheltered slopes dominated by Douglas-fir. Within this map unit occurs small areas located on ridgetops of gravelly sandy loam that is 10 to 20 inches deep over weathered granitic rock; areas of Valcreek very gravelly loam coarse sand; and small areas of Haploxerolls, 2 to 9 percent slopes. The Tallowbox soil is moderately deep and is well drained. Permeability is moderately rapid. Available water capacity is very low or low. Runoff is rapid and the hazard of water erosion is very severe. The Minersville soil is deep and well drained. Permeability is moderately rapid in the Minersville soil. Available water capacity is low or moderate. Runoff is rapid and the hazard of water erosion is very severe.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch site.

199 – Tallowbox-Minersville complex, 50 to 75 percent slopes. *This map unit is in mountains. This unit is 55 percent Tallowbox gravelly coarse sandy loam and 25 percent Minersville sandy loam. The Tallowbox soil is on exposed slopes dominated by ponderosa pine and oaks and the Minersville soil is on sheltered slopes dominated by Douglas fir. Within this map unit occurs small areas located on ridgetops of gravelly sandy loam that is 10 to 20 inches deep over weathered granitic rock; areas of Valcreek are very gravelly loam coarse sand; small areas of Haploxerolls, 2 to 9 percent slopes; and areas of Xerofluvents. The Tallowbox soil is moderately deep and is well drained. Permeability is moderately rapid. Available water capacity is very low or low. Runoff is very rapid and the hazard of water erosion is very severe. The Minersville soil is deep and well drained. Permeability is moderately rapid. Available water capacity is low or moderate. Runoff is very rapid and the hazard of water erosion is very severe.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch site.

213 – Xeralfs-Xerorthents complex, 5 to 50 percent slopes. *This map unit is on hills and terraces. Much of the soil has been removed by hydraulic mining. Areas are dissected by perennial streams. This unit is about 40 percent Xeralfs and 40 percent Xerorthents. The Xeralfs consist of well-drained soils of variable depths. These soils formed in alluvium*

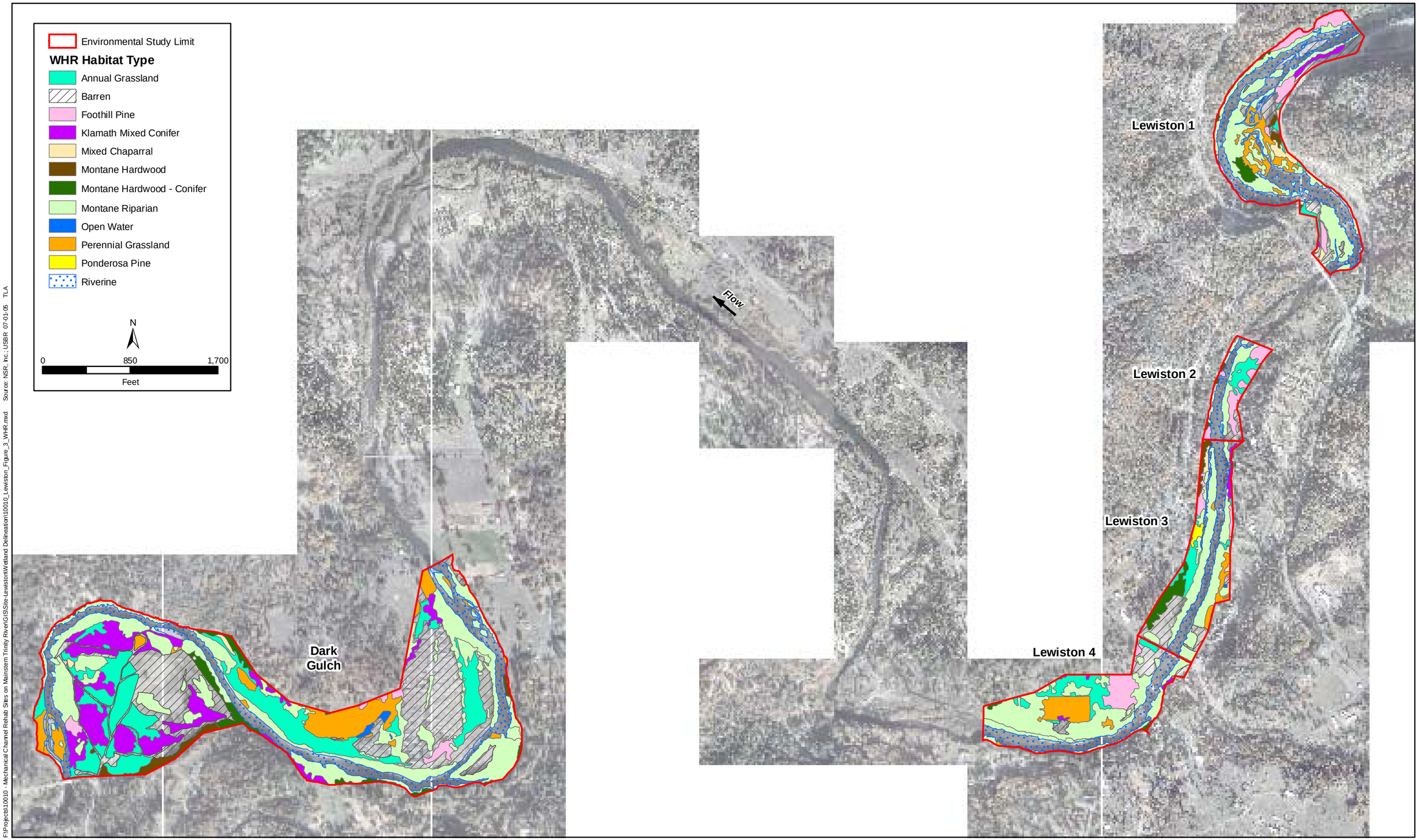
from mixed rock sources and material weathered from weakly consolidated nonmarine sediments. Permeability is very slow to moderate in the Xeralfs. Available water capacity is very low to moderate. Runoff is rapid, and the hazard of water erosion is moderate or severe. The Xerorthents consist of well-drained soils of variable depths. These soils formed in alluvium from mixed rock sources and material weathered from schist. Permeability is slow or moderate in the Xerorthents. Available water capacity is very low or low. Runoff is very rapid, and the hazard of water erosion is moderate or severe. This unit is used for homesite development or as watershed land. (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch site.

217 – Xerofluvents-Riverwash complex, 0 to 5 percent slopes. *This map unit is on flood plains and stream terraces. It formed in alluvium derived from mixed rock sources. This unit is about 45 percent Xerofluvents and 35 percent River wash. Within this map unit occurs varying areas of the stream channel that are under water during some times of the year. Xerofluvents consist of well-drained soils that formed in alluvium from mixed rock sources. Permeability is moderate to rapid in the Xerofluvents. Available water capacity is very low or low. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. These soils are subject to flooding during prolonged, high-intensity storms. Channeling and deposition are common along streambanks. Riverwash consists of nearly barren, unstabilized, stratified sandy, silty, clayey, stony, cobbly, or gravelly alluvium derived from mixed rock sources. Areas of Riverwash are flooded, channeled, and reworked nearly every winter. This unit is used as watershed areas, recreational areas, or wildlife habitat. A few areas are mined for sand and gravel. Careful management of watershed land, recreational areas, and wildlife habitat is needed to keep surface erosion to a minimum and to maintain the quality of the runoff. Areas of Xerofluvents and Riverwash provide seasonal habitat for fish and wildlife. The excessive removal of aggregates can lower the level of streambeds and widen stream channels and thus can undermine structures, lower the water table in areas adjacent to stream channels, erode streambanks, and increase sedimentation downstream. This sedimentation reduces spawning habitat for fish.* (U.S. Department of Agriculture 1998)

Soils of this type occur at the Dark Gulch, Lewiston 2, Lewiston 3, and Lewiston 4 sites.

g) **Plant Communities**: The ESLs support 12 plant communities and other land cover types: foothill pine, Klamath mixed conifer, mixed chaparral, montane hardwood, montane hardwood-conifer, montane riparian, open water, perennial grassland, ponderosa pine, riverine, annual grassland, and barren (Holland 1986; Mayer and Laudenslayer 1988). Figure 3 illustrates the wildlife habitat relationships (WHR) habitat types that were mapped within the ESL during summer 2003 (McBain and



Lewiston 4 and Dark Gulch, Delineation of Waters of the U.S.

Figure 3. WHR Habitat Types

Trush Riparian Inventory, unpublished, 2003). As the Trinity River Restoration Program is fully implemented and ROD flows continue to be delivered, riparian vegetation is expected to decrease and to change to more water tolerant species as the floodplain is inundated more frequently. Consequently, vegetation patterns depicted within this report are expected to adjust as plant species respond to the current (and higher) ROD flow Ordinary High Water Mark (OHWM) which now exists. The current OHWM is evident in Figure 4.

Foothill Pine

The foothill pine habitat type occurs at all five sites. The dominant overstory species present in this habitat is gray pine (*Pinus sabiana*). Understory vegetation includes common manzanita (*Arctostaphylos* sp.), buck brush (*Ceonothus cuneatus*), skunkbrush (*Rhus trilobata*), and poison-oak (*Toxicodendron diversilobum*). The underlying herbaceous layer includes ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), and false hedge-parsley (*Torilis arvensis*).

Klamath Mixed Conifer

The Klamath mixed conifer habitat type occurs at all five sites. Klamath mixed conifer habitats typically are tall, dense to moderately open, needle-leaved evergreen forests with patches of broad-leaved evergreen and deciduous low trees and shrubs. The habitat is dominated by tall evergreen conifers up to 60 meters in height with a rich shrub layer and well-developed herbaceous layers. On more xeric sites, the habitat is generally open, but very diverse forestland, having a well-developed shrub layer. The overstory layer is characterized by a mixture of conifers. Dominant conifers are white fir (*Abies concolor*) and Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*). Occasional broadleaf trees include golden chinquapin (*Chrysolepis chrysophylla*), canyon live oak (*Quercus chrysolepis*), and black oak (*Q. kelloggii*).

Mixed Chaparral

The mixed chaparral habitat type occurs at the Lewiston 1, Lewiston 3 and Dark Gulch sites. Mixed chaparral is a structurally homogeneous brushland type dominated by shrubs with thick, stiff, heavily cutinized evergreen leaves. The dominant species present in this habitat include greenleaf manzanita (*Arctostaphylos patula*) and buck brush.

Montane Hardwood

The montane hardwood habitat type occurs at all five sties. Dominant tree species observed within this plant community include Pacific madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*), canyon live oak, and black oak. Associated shrub species observed include common manzanita (*Arctostaphylos manzanita*), buck brush, skunkbrush, snowberry (*Symphoricarpos albus* var. *laevigatus*), and poison-oak. The underlying herbaceous layer includes ripgut brome, cheatgrass, blue wild rye (*Elymus glaucus*), silver bush lupine (*Lupinus albifrons*), purple sanicle (*Sanicula bipinnatifida*), and false hedge-parsley.

Montane Hardwood-Conifer

In the northern interior of California, the montane hardwood-conifer community consists of at least one-third conifer and at least one-third broadleaf trees scattered throughout the landscape in a mosaic-like pattern of small pure stands of conifers interspersed with small

stands of broad-leaved trees (Holland 1986; Mayer and Laudenslayer 1988). Geographically and biologically, this plant community often serves as an ecotone between dense coniferous forest and montane hardwood, mixed chaparral, or open woodland vegetation types.

This plant community occurs at the Lewiston 1, Lewiston3, Lewiston 4, and Dark Gulch sites. Dominant tree species observed within this plant community include Pacific madrone, bigleaf maple, ponderosa pine (*Pinus ponderosa)*, gray pine, Douglas-fir, canyon live oak, and black oak. Shrub species observed include common manzanita, buck brush, cascara (*Rhamnus purshiana*), skunkbrush, snowberry, and poison-oak. The underlying herbaceous layer includes ripgut brome, cheatgrass, blue wild rye, silver bush lupine, purple sanicle, and false hedge-parsley.

Montane Riparian

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

Open Water

Open water occurs at the Lewiston 3 and Dark Gulch sites. Open water consists of deep-water areas that exhibit perennial inundation. Vegetation is limited to the edges of these features because the water depth inhibits sunlight from reaching the bottom where vegetation would typically be rooted.

Perennial Grassland

Perennial grassland occurs at the Lewiston 1, Lewiston 3, Lewiston 4, and Dark Gulch sites. Perennial grassland habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. Species present in this habitat include a variety of introduced and native perennial species, including sedge (*Carex* spp.*).*

Ponderosa Pine

Ponderosa pine habitat occurs at the Lewiston 4 site. The dominant overstory species present in this habitat is ponderosa pine. Understory vegetation includes common manzanita, buck brush, and poison-oak. The underlying herbaceous layer includes ripgut brome and cheatgrass.

Riverine

River habitat occurs at all five sites. Riverine habitat is characterized as the area including open water below the OHWM as defined by Reclamation. Riverine habitat is dominated by run and riffle habitats, with boulder, cobble, gravel, and sand substrates. Vegetation within the active river channel is sparse, with occasional clumps of sedges. Montane riparian habitat transitions into riverine habitat along the flood plain.

Annual Grassland

The annual grassland plant community occurs at all five sites. Located adjacent to areas of riparian vegetation, this plant community is commonly dominated by introduced annual grass species, including wild oats (*Avena fatua*), soft brome (*Bromus hordeaceus*), ripgut brome, cheatgrass, and hare barley (*Hordeum murinum* ssp. *leporinum*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*E. cicutarium*), California poppy (*Eschscholzia californica*), turkey mullein (*Eremocarpus setigerus*), true clovers (*Trifolium* spp.), burclover (*Medicago polymorpha*), and many others.

Barren

Barren land exists at all five sites. Barren land consists primarily of rock, pavement, and sand. Vegetation is usually not present, although sparse opportunistic grasses and forbs or weedy species may be present.

4. DELINEATION METHODS AND REFERENCES

a) **Overall Technical Method**: The determination of wetland status within each ESL was based on field observations made by qualified NSR personnel of onsite soil, vegetation, and hydrological characteristics. This methodology is consistent with the approach for delineation of jurisdictional waters, as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). The approach used an OHWM generated by a HEC-RAS model developed by the California Department of Water Resources at the request of Reclamation. Use of the modeled OHWM was accepted by the Corps in the Trinity River Mechanical Channel Rehabilitation Project: Canyon Creek Suite delineation of waters of the United States (as amended in March 2005), and showed strong correlation with field indicators within all of these upper Trinity River Rehabilitation site ESLs. A total of 31 three-parameter (i.e., vegetation, hydrology, and soils) data points, representing wetland and upland features, were characterized and documented throughout the ESLs. Data forms specific to each site are in Appendix B. Photographs of data points are in Appendix C. Figure 4, Sheets 1, 2 and 3, illustrates the jurisdictional boundaries of waters of the United States, including wetlands within each of the ESLs.

b) **Date of Field Observations**: Field observations were conducted between April 11 and April 15, 2005.

c) **Wetland Vegetation Indicator Status Reference:** Plant species wetland indicator status was determined using the *National List of Plant Species That Occur in Wetlands: California (Region 0)* (Reed 1988).

d) **Hydric Soil Method of Determination:** Positive indicators of hydric soils were observed in the field in accordance with the conventions of the National Cooperative Soil Survey, *Keys to Soil Taxonomy* (Soil Survey Staff 1992), the *Field Indicators of Hydric Soils in the United States*

(USDA 2002), and the Soil Conservation Service Field Office *Official List of Hydric Soil Map Units for Trinity County, California, Weaverville Area Soil Survey* (USDA 1992).

e) **Wetland Hydrology Method of Determination:** Indicators for wetland hydrology were determined using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

f) **Wetland Mapping:** Boundaries of each wetland feature, the three-parameter data points, and numerous location monuments were mapped by NSR using a Pathfinder

Pro Global Positioning System (GPS) capable of sub-meter accuracy (NAD 27 projection). These data were then overlaid onto digital aerial photography of the ESLs and aligned using monument location data.

5. ATYPICAL SITUATIONS

No atypical situations exist within any of the five ESLs proposed for channel rehabilitation activities.

6. DELINEATION RESULTS

a) **Waters of the United States, Including Wetlands:** Seven types of waters of the United States were mapped within the ESLs: riparian wetland, fresh emergent wetland, intermittent pool, riverine (perennial stream), intermittent creek, ephemeral creek, and open water. These features occupy a total of 112.54 acres. No occurrence of isolated waters (the term used to define a separate feature that at no time throughout the year is linked to any navigable waters or their tributaries) was found within any of five ESLs. In wet years, all overflow within each of the ESLs drains into the Trinity River. The jurisdictional waters determined for the five sites are summarized in Table 1. Figure 4, Sheets 1–3, show the boundaries of jurisdictional waters at each site as well as the plant communities (see Appendix D for Figure 4, Sheets 1–3 presented in black and white). Acreages of Corps defined jurisdictional waters are included in Table 2.

b) **Characteristics of Delineated Features:** The riverine (perennial stream), intermittent creek, and open water pond features are classified as "other waters." These features exhibit a distinct bed and bank and an OHWM. The Corps has jurisdiction of the features that occur within the OHWM. For purposes of this wetland delineation, we have defined the OHWM as the approximate line of the 1.5-year recurrence interval flood for these areas. McBain & Trush (2004) calculated the 1.5-year recurrence interval (bankfull flow) for Hocker Flat (River Mile 78 to 79.1) and rehabilitation sites downstream of Canyon Creek to the North Fork confluence, to be approximately 6,600 cfs. For those downstream rehabilitation sites, the 1.5 year recurrence interval is based on a release at Lewiston Dam of 6,000 cfs and tributary accretion of 600 cfs.

The OHWM for the Lewiston 4 sites and Dark Gulch (River Mile 111.5 to 105.5) was based on HEC-RAS modeling the water elevation of a 6,000 cfs release from Lewiston dam as the 1.5 year recurrence flow. This OHWM was verified in the field as standard distinguishing features were observed by a qualified wetland delineator (e.g., driftline, sedimentation deposits).

Table 1. Characteristics of the Wetland Types within the Lewiston 1–4 and Dark Gulch ESLs, Trinity River Mechanical Channel Rehabilitation Project, Trinity County, California.

Jurisdictional Waters Type	Wetland Vegetation Indicators: Typical Dominant Wetland Plant Species			Hydric Soils Indicators	Hydrology Indicators
	Common Name	Scientific Name	Indicator Status[1]		
Riparian Wetland	Narrow-leaved willow	*Salix exigua*	OBL	Listed on hydric soils list; frequently flooded	Drift lines; sediment deposits; drainage patterns in wetlands
	Cattail – Broad-leaf	*Typha latifolia*	OBL		
	Himalayan blackberry	*Rubus discolor*	FACW*		
	Arroyo willow	*Salix lasiolepis*	FACW		
	Blue wildrye	*Elymus glaucus*	FACU		
Fresh Emergent	Cattail – Broad-leaf	*Typha latifolia*	OBL	Frequently ponded	Inundated; saturated in upper 12"; sediment deposits; water-stained leaves; water marks
	Common rush	*Juncus effusus*	OBL		
	Clustered field sedge	*Carex praegracilis*	FACW-		
Intermittent Pool	Santa Barbara sedge	*Carex barbarae*	FACW	Gleyed or low-chroma colors	Sediment deposits; water-stained leaves; saturated in upper 12"
	Dock	*Rumex sp.*	FACW		
	Rush	*Juncus sp.*	FACW*		
	Foxtail barley	*Hordeum marinum*	FAC		
	Blue wildrye	*Elymus glaucus*	FACU		

[1]Obligate (OBL) – Plants that almost always occur in wetlands
Facultative (FAC) – Plants with a similar likelihood of occurring in wetlands and nonwetlands
Facultative Wetland (FACW-) – Plants that usually occur in wetlands, but also occur in nonwetlands
Facultative Upland (FACU) - Plants that occur sometimes in wetlands, but occur more often in non-wetlands

The riparian wetland, fresh emergent wetland, and intermittent pool features are classified as jurisdictional wetlands. All three of the wetland parameters, as defined by the Corps (i.e., vegetation, hydrology, and soils) are satisfied within these wetland features. Table 1 lists the dominant plant species occurring and the hydric soil and hydrology indicators observed within the wetland features. The jurisdictional wetland types and "other waters" occurring within the project area are discussed below.

Riparian Wetland. Features determined to be riparian wetlands consist of areas associated with the Trinity River corridor. Dominant plant species composition is similar in the upland and wetland portions of the montane riparian habitat at each site. The differences between montane riparian habitat (a plant community) and riparian wetland (a jurisdictional type) include positive field indicators of wetland hydrology and hydric soils in riparian wetlands.