Appendix D – Aquatic Resources Delineation Report

Michael Baker
INTERNATIONAL

5 Hutton Centre Drive, Suite 500
Santa Ana, California 92707
Contact: John Parent (949) 472-3432
JN 195651

AQUATIC RESOURCES DELINEATION REPORT

LAKE GREGORY REGIONAL PARK SITEWIDE SEDIMENT MANAGEMENT PROJECT

Unincorporated Community of Crestline,
County of San Bernardino, California

Prepared for:
County of San Bernardino
222 W. Hospitality Lane, 2nd Floor
San Bernardino, California 92415
Contact: Jon Aldana
jon.aldana@dpw.sbcounty.gov
(909) 386-8801

March 6, 2024

Michael Baker
INTERNATIONAL

LAKE GREGORY REGIONAL PARK SITEWIDE SEDIMENT MANAGEMENT PROJECT

UNINCORPORATED COMMUNITY OF CRESTLINE, COUNTY OF SAN BERNARDINO, CALIFORNIA

Aquatic Resources Delineation Report

The undersigned certify that this report is a complete and accurate account of the findings and conclusions of jurisdictional wetland and non-wetland "waters of the U.S.," "waters of the State," and streambed/banks and associated riparian vegetation delineation for the above-referenced project.

John R. Parent

John Parent
Biologist/Regulatory Specialist
Natural Resources and Regulatory Permitting

Stephen Anderson

Stephen Anderson
Biologist/Regulatory Specialist
Natural Resources and Regulatory Permitting

March 6, 2024

JN 195651

EXECUTIVE SUMMARY

On behalf of San Bernardino County Regional Parks, Michael Baker International (Michael Baker) has prepared this Aquatic Resources Delineation Report for the proposed Lake Gregory Regional Park Sitewide Sediment Management Project (project or project site) located in the unincorporated community of Crestline within San Bernardino County, California. Michael Baker conducted an aquatic resources delineation on October 12, 2023.

The proposed project is a restoration/improvement project for near-term sediment removal and an ongoing maintenance program of sediment removal to improve the lake's beneficial uses. The proposed project's objectives are to establish a plan for routine maintenance of the lake to improve water clarity and quality, enhance recreational features, and improve fishery habitat resources. The County proposes to continue maintenance activities on a year-round basis with seasonal restrictions on certain activities. This project is a continuation and improvement of historic sediment management activities at Lake Gregory.

This report documents the aquatic resources identified by Michael Baker within the project site that are potentially subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the federal Clean Water Act (CWA), the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA and/or the California Porter-Cologne Water Quality Control Act, and the California Department of Fish and Wildlife (CDFW) pursuant to Sections 1600 et seq. of the California Fish and Game Code (CFGC).

State and federal jurisdictional areas were identified within the project site. Table ES-1, *Aquatic Resource Jurisdictional Limits Within the Project Site,* identifies the total jurisdiction for each regulatory agency. Delineation methods followed the most recent, acceptable guidelines for conducting an aquatic resources delineation in this region; however, only the regulatory agencies can make a final determination of jurisdictional limits.

Features identified within the project area are subject to USACE, RWQCB, and CDFW regulatory authority and would require authorization prior to the commencement of construction in areas identified as jurisdictional. Based on a detailed review of current site conditions and project design plans, the following regulatory permits/authorizations would be required prior to construction within the identified jurisdictional areas:

- USACE Section 404 permit for impacts associated with the placement of dredge and/or fill material into waters of the U.S. (WoUS) under the CWA.
- RWQCB Section 401 Water Quality Certification (WQC) for impacts associated with the placement of dredge and/or fill material into WoUS pursuant to the Porter-Cologne Act and CWA.
- CDFW Section 1602 Lake or Streambed Alteration Agreement (or other approval in lieu of a formal agreement such as an Operation-of-Law letter) for alteration to lakes, streambed/banks, and/or associated riparian vegetation.

TABLE ES-1. AQUATIC RESOURCE JURISDICTIONAL LIMITS WITHIN THE PROJECT SITE

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Lake Gregory	Lacustrine	Non-Wetland	77.98 (N/A)	0.00 (0)	77.98 (N/A)	0.00 (0)	77.98 (N/A)	0.00 (0)	0.29
Library Basin	Riverine	Wetland	0.00 (0)	0.41 (235)	0.00 (0)	0.41 (235)	0.00 (0)	0.41 (235)	0.00
San Moritz Channel Basins	Lacustrine	Non-Wetland	0.79 (993)	0.00 (0)	0.79 (993)	0.00 (0)	0.00 (0)	1.18 (993)	0.00
Inlet 1	Riverine	Non-Wetland	0.0002 (5)	0.00 (0)	0.0002 (5)	0.00 (0)	0.00 (0)	0.0002 (5)	0.00
Inlet 2	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 3	Not observed, assumed direct connection to Lake		N/A,	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 4	Riverine	Non-Wetland	0.004 (83)	0.00 (0)	0.004 (83)	0.00 (0)	0.00 (0)	0.003 (83)	0.00
Inlet 5	Riverine	Non-Wetland	0.003 (48)	0.00 (0)	0.003 (48)	0.00 (0)	0.00 (0)	0.003 (48)	0.00
Inlet 6	Riverine	Non-Wetland	0.005 (70)	0.00 (0)	0.005 (70)	0.00 (0)	0.00 (0)	0.004 (70)	0.00
Inlet 7	Observed, included with San Moritz Channel		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 8	Riverine	Non-Wetland	0.039 (344)	0.00 (0)	0.039 (344)	0.00 (0)	0.00 (0)	0.039 (344)	0.00
Inlet 9a	Riverine	Non-Wetland	0.002 (47)	0.00 (0)	0.002 (47)	0.00 (0)	0.00 (0)	0.002 (47)	0.00
Inlet 9b	Not observed, assumed direct connection to Lake N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 10	Riverine	Non-Wetland	0.002 (75)	0.00 (0)	0.002 (75)	0.00 (0)	0.00 (0)	0.002 (75)	0.00
Inlet 11	Riverine	Non-Wetland and Wetland	0.002 (19)	0.12 (109)	0.115 (109)	0.12 (109)	0.00 (0)	0.115 (109)	0.00

TABLE ES-1, CONTINUED

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Inlet 12	Riverine	Non-Wetland	0.005 (103)	0.00 (0)	0.005 (103)	0.00 (0)	0.00 (0)	0.005 (103)	0.00
Inlet 13	Riverine	Non-Wetland	0.006 (125)	0.00 (0)	0.006 (125)	0.00 (0)	0.00 (0)	0.006 (125)	0.00
Inlet 14	Riverine	Non-Wetland	0.002 (44)	0.00 (0)	0.002 (44)	0.00 (0)	0.00 (0)	0.002 (44)	0.00
Inlet 15	Observed, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Inlet 16	Riverine	Non-Wetland	0.002 (36)	0.00 (0)	0.002 (36)	0.00 (0)	0.00 (0)	0.002 (36)	0.00
Inlet 17	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 18	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 19	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 20	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 21	Riverine	Non-Wetland	0.005 (29)	0.00 (0)	0.005 (29)	0.00 (0)	0.00 (0)	0.005 (29)	0.00
Inlet 22	Observed, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Inlet 23	Riverine	Non-Wetland	0.0001 (5)	0.00 (0)	0.0001 (5)	0.00 (0)	0.00 (0)	0.0001 (5)	0.00
Inlet 24	Riverine	Non-Wetland	0.0006 (9)	0.00 (0)	0.0006 (9)	0.00 (0)	0.00 (0)	0.0006 (9)	0.00
Spillway 25	Riverine	Non-Wetland	0.0008 (18)	0.00 (0)	0.0008 (18)	0.00 (0)	0.00 (0)	0.0008 (18)	0.00
Inlet 26	Not observed, underground, outlets to #25		N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE ES-1, CONTINUED

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Inlet 27	Not observed, underground, outlets to #25		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 28	Riverine	Non-Wetland	0.0004 (10)	0.00 (0)	0.0004 (10)	0.00 (0)	0.00 (0)	0.0004 (10)	0.00
Inlet 29	Riverine	Non-Wetland	0.0004 (8)	0.00 (0)	0.0004 (8)	0.00 (0)	0.00 (0)	0.0004 (8)	0.00
Inlet 30	Riverine	Non-Wetland	0.00009 (4)	0.00 (0)	0.00009 (4)	0.00 (0)	0.00 (0)	0.00009 (4)	0.00
Inlet 31	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 32	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 33	Observed, outlets directly into Lake, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
AF- 1	Riverine	Non-Wetland	0.002 (37)	0.00 (0)	0.002 (37)	0.00 (0)	0.00 (0)	0.002 (37)	0.00
TOTAL			**78.85 (2,112)**	**0.53 (344)**	**78.85 (2,112)**	**0.53 (344)**	**77.98**	**1.78 (2,437)**	**0.29**

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

amsl ..... above mean sea level
CDFW ..... California Department of Fish and Wildlife
CEQA ..... California Environmental Quality Act
CFGC ..... California Fish and Game Code
CMP ..... corrugated metal pipes
CPP ..... corrugated plastic pipes
CWA ..... Clean Water Act
DBH ..... diameter at breast height
EPA ..... U.S. Environmental Protection Agency
F ..... Fahrenheit
FAC ..... Facultative
FACW ..... Facultative Wetland
GPS ..... Global Positioning System
in/hr ..... inches per hour
LSAA ..... Lake and Streambed Alteration Agreement
Michael Baker ..... Michael Baker International
OBL ..... Obligate Wetland
OHWM ..... ordinary high-water mark
Porter-Cologne Act ..... California Porter-Cologne Water Quality Control Act
Procedures ..... State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State
Project ..... Lake Gregory Regional Park Sitewide Sediment Management Project
Regional Parks ..... San Bernardino County Regional Parks
Regional Supplement ..... Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0
Revised Definition ..... Revised Definition of "Waters of the United States," Conforming
RWQCB ..... Regional Water Quality Control Board
TNW ..... Traditional Navigable Water
UPL ..... Obligate Upland
USACE ..... U.S. Army Corps of Engineers
USDA ..... U.S. Department of Agriculture, Natural Resources Conservation Service
USFWS ..... U.S. Fish and Wildlife Service
USGS ..... U.S. Geological Survey
WoUS ..... waters of the U.S.
WQC ..... Water Quality Certification

SECTION 1 INTRODUCTION

On behalf of San Bernardino County Regional Parks (Regional Parks), Michael Baker International (Michael Baker) has prepared this Aquatic Resources Delineation Report to describe, map, and quantify aquatic features for the approximately 132-acre Lake Gregory Regional Park Sitewide Sediment Management Project site.

This report describes the regulatory setting, methods, and results of the aquatic resources delineation. This report presents Michael Baker's best professional effort at determining the jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance from the regulatory agencies; however, only the regulatory agencies can make a final determination of jurisdictional limits.

1.1 PROJECT LOCATION

Lake Gregory is located at 24171 Lake Drive in the unincorporated community of Crestline, San Bernardino County, California (Figure 1, *Regional Vicinity*). Specifically, the project site is within Section 23 of Township 2 South, Range 4 West of the U.S. Geological Survey's (USGS) San Bernardino North, California 7.5-minute topographic quadrangle (USGS 2023; Figure 2, *Project Vicinity*). The project site is generally east of Highway 138 and north of Highway 18 (Figure 3, *Project Site*).

1.2 PROJECT DESCRIPTION

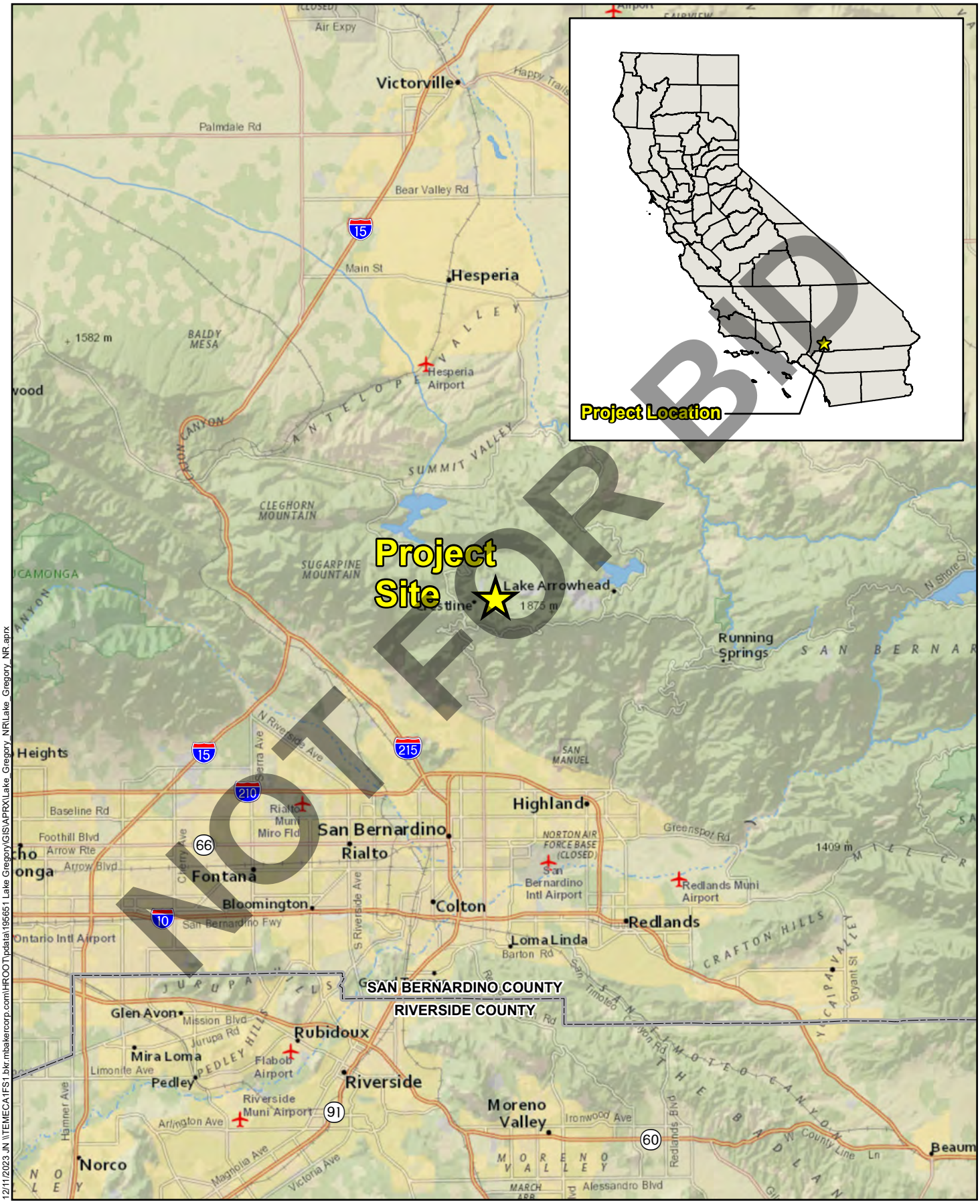
The proposed project includes both the construction of improvements and routine maintenance elements. The construction of various improvements is necessary to improve recreational features and infrastructure supporting Lake Gregory Regional Park, primarily for water quality, recreational purposes, and public safety. This project is a continuation of the 2019 Lake Gregory Sediment Management and Bio-Retention Project (Dudek 2019a).

The construction of improvements includes the following actions:

- Improvement to the Swim Beach area including dredging, regrading, and placement of a permanent in-water barrier.
- Improvements to South Beach including dredging and regrading.
- Improvement to most of the inlet locations around the lake perimeter with the addition of headwall structures and rip rap at some locations.
- Re-construction and enhancement of an ephemeral channel (San Moritz Channel Basins).

Maintenance includes the following actions:

- On-going sediment management and removal of existing and future sediment accumulation.
- Routine maintenance of Lake Gregory, San Moritz Channel Basins, and Library Basin, including Lake Gregory beach grading, lake and basin structural repairs and debris/trash removal, inlet/outlet repairs, access road and appurtenant structure repairs, slope repairs, maintenance of lake water surface/water quality operational standards, and vector control.



12/11/2023 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NRLake_Gregory_NR.aprx

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

Regional Vicinity

Figure 1

Michael Baker INTERNATIONAL

0 2.5 5 Miles

Source: ArcGIS Online, 2018

12/11/2023 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

Project Site

Michael Baker INTERNATIONAL

0 0.5 1 Miles

Source: USGS 7.5-Minute topographic quadrangle maps: *Harrison Mountain, Lake Arrowhead, San Bernardino North, and Silverwood Lake, California (2021)*

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

Project Vicinity

Figure 2

12/11/2023 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

Project Site

Reference Point

Michael Baker INTERNATIONAL

0 290 580 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

Project Site

Figure 3

SECTION 2 REGULATIONS

Three agencies regulate activities affecting inland streams, wetlands, and riparian areas in California. The U.S. Army Corps of Engineers (USACE) Regulatory Division regulates activities pursuant to Section 404 of the federal Clean Water Act (CWA). Of the state agencies, the California Department of Fish and Wildlife (CDFW) regulates activities under Sections 1600 et seq. of the California Fish and Game Code (CFGC), and the Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401 of the CWA and/or the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

2.1 U.S. ARMY CORPS OF ENGINEERS

Since 1972, the USACE and U.S. Environmental Protection Agency (EPA) have jointly regulated discharges of dredged or fill material into "waters of the U.S." (WoUS), including wetland and non-wetland aquatic features, pursuant to Section 404 of the CWA. On September 8, 2023, the EPA and the USACE published the *Revised Definition of "Waters of the United States," Conforming* (Revised Definition) in the Federal Register to redefine WoUS and align the regulatory text with key aspects of the U.S. Supreme Court's decision under *Sackett v. EPA*. Notable changes under the Revised Definition include the requirement that tributaries demonstrate relatively permanent, standing, or continuously flowing water; and the requirement that adjacent wetlands demonstrate "a continuous surface connection." Guidance from the USACE regarding these recent changes is forthcoming. The USACE's definition of WoUS is provided in full at 33 CFR 328.3.

2.2 REGIONAL WATER QUALITY CONTROL BOARD

Applicants for a federal license or permit for activities that may discharge to WoUS must seek a Water Quality Certification (WQC) from the state or Indian tribe with jurisdiction.[1] In California, there are nine RWQCBs that issue or deny certification for discharges within their geographical jurisdiction. Such certification is based on a finding that the discharge will meet water quality standards, which are defined as numeric and narrative objectives in each RWQCB's Basin Plan, and other applicable requirements. The State Water Resources Control Board has this responsibility for projects affecting waters within multiple RWQCBs. The RWQCBs' jurisdiction extends to all WoUS, including wetlands, and to non-federal waters of the State (described below).

The Porter-Cologne Act gives the state broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline waters. Generally, if there is no continuous surface connection to a Traditional Navigable Water (TNW), any person proposing to discharge waste into waters of the State that could affect its water quality must file a Report of Waste Discharge. Although "waste" is partially defined as any waste substance associated with human habitation, the RWQCB also interprets this to include fill discharged into water bodies.

[1] Title 33, United States Code, Section 1341; Clean Water Act Section.

On April 2, 2019, the State Water Resources Control Board adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming *Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California*. The Procedures consist of four major elements:

1) a wetland definition;
2) a framework for determining if a feature that meets the wetland definition is a water of the State;
3) wetland delineation procedures; and
4) procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities.

The Procedures were approved by the Office of Administrative Law on August 28, 2019, and became effective May 28, 2020.

2.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Sections 1600 et seq. of the CFGC establishes a process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely affect fish and wildlife resources, or when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Section 1602 of the CFGC requires any person, state, or local governmental agency or public utility to notify CDFW before beginning any activity that will do one or more of the following:

(1) Substantially obstruct or divert the natural flow of a river, stream, or lake.
(2) Substantially change or use any material from the bed, channel, or bank of a river, stream, or lake.
(3) Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

This applies to all perennial, intermittent, and ephemeral rivers, streams, lakes, and associated riparian vegetation in the state, including the maintenance of existing drain culverts, outfalls, and other structures.

SECTION 3 METHODS

This report is supported by a desktop analysis and field delineation conducted on October 12, 2023, by qualified wetland surveyors and regulatory specialists John Parent and Stephen Anderson. A field delineation was conducted to determine the jurisdictional limits of WoUS and waters of the State (including potential wetlands), located within the boundaries of the project site.

3.1 DESKTOP ANALYSIS

Prior to the field delineation, Michael Baker thoroughly reviewed relevant literature and materials to obtain a general understanding of the environmental setting and to preliminarily identify features/areas within the project site that may fall under the jurisdiction of the regulatory agencies. Background information and sources consulted included a watershed review, local climate, USGS 7.5-minute topographic quadrangle map, aerial photography, soil survey maps, flood zones, and hydrography datasets. Section 4 has a summary of each source that was reviewed.

3.2 FIELD DELINEATION

Following the initial data collection, Michael Baker wetland delineators conducted an on-site delineation of the study area using the most recent, agency-approved methods to identify and map the extent of federal and state jurisdictional features (i.e., wetland and non-wetland WoUS, waters of the State, streambed, riparian vegetation). While in the field, jurisdictional features were recorded on an aerial base map at a scale of 1:1,200 (1"=100') using topographic contours and visible landmarks as guidelines. Data points were obtained with a Garmin Map 64 Global Positioning System (GPS) as well as a handheld Android device with GPS capabilities to record and identify specific widths for ordinary high-water mark (OHWM) indicators and the locations of photographs, soil pits, and other pertinent jurisdictional features. These data were then transferred as a .shp file and added to the report's jurisdictional figures. The jurisdictional figures were prepared using ESRI ArcMap Version 10 software and comply with the USACE's Minimum Standards for Acceptance of Aquatic Resource Delineations (USACE 2016).

3.3 WATERS OF THE U.S.

3.3.1 Non-Wetland Waters of the U.S.

The limits of the USACE's jurisdiction in non-tidal waters extend to the OHWM, which is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."[2] An OHWM can be determined by the observation of a natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; presence of litter and debris; wracking; vegetation matted down, bent, or absent; sediment

[2] 33 Code of Federal Regulations §328.3(e), Clean Water Act regulations.

sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and/or change in plant community. The RWQCB generally shares the USACE jurisdictional methodology.

3.3.2 Wetland Waters of the U.S.

For this project location, jurisdictional wetlands were delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Regional Supplement; USACE 2008). This document is part of a series of regional supplements to the *1987 Corps Wetland Delineation Manual*. According to the Regional Supplement, identification of wetlands is based on a three-parameter approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. To be considered a wetland, an area must exhibit at least minimal characteristics within these three parameters. The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. In the field, vegetation, soils, and evidence of hydrology have been examined using the methodology listed below and documented on USACE wetland determination data forms, when applicable.

Vegetation

Nearly 5,000 plant types in the United States may occur in wetlands. These plants, referred to as hydrophytic vegetation, are listed in the National Wetland Plant List by the USACE. In general, hydrophytic vegetation is present when the plant community is dominated by species that can tolerate prolonged inundation or soil saturation during the growing season. Vegetation strata are sampled separately when evaluating indicators of hydrophytic vegetation. A stratum for sampling purposes is defined as having five percent or more total plant cover. The following vegetation strata are recommended for use across the Arid West Region:

- *Tree Stratum:* Consists of woody plants 3 inches or more in diameter at breast height (DBH).
- *Sapling/shrub Stratum:* Consists of woody plants less than 3 inches in DBH, regardless of height.
- *Herb Stratum:* Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size.
- *Woody Vines:* Consists of all woody vines, regardless of size.

The following indicator is applied per the test method below.[3] Hydrophytic vegetation is present if any of the indicators are satisfied.

[3] Although the Dominance Test is utilized in most wetland delineations, other indicator tests may be employed. If one indicator of hydric soil and one primary or two secondary indicators of wetland hydrology are present, then the Prevalence Test (Indicator 2) may be performed. If the plant community satisfies the Prevalence Test, then the vegetation is hydrophytic. If the Prevalence Test fails, then the Morphological Adaptation Test may be performed, where the delineator analyzes the vegetation for potential morphological features.

Indicator 1 – Dominance Test

Cover of vegetation is estimated and is ranked according to their dominance. Species that contribute to a cumulative total of 50 percent of the total dominant coverage, plus any species that comprise at least 20 percent (also known as the "50/20 rule") of the total dominant coverage, are recorded on a wetland determination data form. Wetland indicator status is assigned to each species using The National Wetland Plant List, version 3.4 (USACE 2018). If greater than 50 percent of the dominant species from all strata are Obligate Wetland, Facultative Wetland, or Facultative species, the criteria for wetland vegetation is considered to be met. Plant indicator status categories are described below:

- *Obligate Wetland (OBL):* Plants that occur almost always in wetlands under natural conditions, but which may also occur rarely in non-wetlands.
- *Facultative Wetland (FACW):* Plants that occur usually in wetlands, but also occur in non-wetlands.
- *Facultative (FAC):* Plants with similar likelihood of occurring in both wetlands and non-wetlands.
- *Facultative Upland (FACU):* Plants that occur sometimes in wetlands, but occur more often in non-wetlands.
- *Obligate Upland (UPL):* Plants that occur rarely in wetlands but occur almost always in non-wetlands under natural conditions.

Hydrology

Wetland hydrology indicators are presented in four groups:

- *Group A – Observation of Surface Water or Saturated Soils*

  Group A is based on the direct observation of surface water or groundwater during the site visit.

- *Group B – Evidence of Recent Inundation*

  Group B consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently. These indicators include water marks, drift deposits, sediment deposits, and similar features.

- *Group C – Evidence of Recent Soil Saturation*

  Group C consists of indirect evidence that the soil was saturated recently. Some of these indicators, such as oxidized rhizospheres surrounding living roots and the presence of reduced iron or sulfur in the soil profile, imply that the soil has been saturated for an extended period.

- *Group D – Evidence from Other Site Conditions or Data*

  Group D consists of vegetation and soil features that indicate contemporary rather than historical wet conditions and include shallow aquitard and the FAC-neutral test.

If wetland vegetation criteria are met, the presence of wetland hydrology is evaluated at each transect by recording the extent of observed surface flows, depth of inundation, depth to saturated soils, and depth to free water in the soil test pits. The lateral extent of the hydrology indicators is used as a guide for locating soil pits for evaluation of hydric soils and jurisdictional areas. In portions of the stream where the flow is divided by multiple channels with intermediate sand bars, the entire area between the channels is considered within the OHWM and the wetland hydrology indicator is considered met for the entire area.

Soils

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper 16-20 inches.[4] The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. If any hydric soil features are located, progressive pits are dug moving laterally away from the active channel until hydric features are no longer present within the top 20 inches of the soil profile.

Once in the field, soil characteristics are verified by digging soil pits along each transect to an excavation depth of 20 inches; in areas of high sediment deposition, soil pit depth may be increased. Soil pit locations are usually placed within the drainage invert or within adjoining vegetation. At each soil pit, the soil texture and color are recorded by comparison with standard plates within a Munsell Soil Chart (Munsell Color 2012). Munsell Soil Charts aid in designating color labels to soils, based by degrees of three simple variables—hue, value, and chroma. Any indicators of hydric soils, such as organic accumulation, iron reduction, translocation, accumulation, and sulfate reduction, are also recorded.

Hydric soil indicators are present in three groups:

- *All Soils*

  "All soils" refers to soils with any U.S. Department of Agriculture, Natural Resources Conservation Service (USDA) soil texture. Hydric soil indicators in this group include histosol, histic epipedon, black histic, hydrogen sulfide, stratified layers, 1-centimeter muck, depleted below dark surface, and thick dark surface.

- *Sandy Soils*

  "Sandy soils" refers to soil materials with a USDA soil texture of loamy fine sand and coarser. Hydric soil indicators in this group include sandy mucky mineral, sandy gleyed matrix, sandy redox, and stripped matrix.

[4] According to the Regional Supplement (USACE 2008), growing season dates are determined through on-site observations of the following indicators of biological activity in a given year: (1) aboveground growth and development of vascular plants, and/or (2) soil temperature.

- *Loamy and Clayey Soils*

  "Loamy and clayey soils" refers to soil materials with a USDA soil texture of loamy very fine sand and finer. Hydric soil indicators in this group include loamy mucky mineral, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, and vernal pools.

3.4 WATERS OF THE STATE

The RWQCB's jurisdiction is mapped similarly to the USACE, by defining an OHWM and utilizing the three-parameter approach for wetlands, as described above. In the case where the waterbody is not a WoUS, the RWQCB considers such waterbodies to be jurisdictional waters of the State. The 2019 Procedures adopted by the State Water Resources Control Board contain a wetland definition and wetland delineation procedures. The state wetland definition and delineation procedures are largely consistent with the three-parameter approach, involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology, implemented by the USACE and outlined in the 2010 Regional Supplement. One exception, however, is that an area can lack vegetation and still qualify as a wetland water of the State if it satisfies both the hydric soil and wetland hydrology parameters.

3.5 STREAMBED AND ASSOCIATED RIPARIAN HABITAT

CDFW jurisdiction applies to all perennial, intermittent, and ephemeral rivers, streams, lakes, and associated riparian vegetation in the State of California. CDFW regulatory authority extends to include riparian habitat (including adjacent wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils or saturated soil conditions. Generally, CDFW jurisdiction is mapped to the top of the active bank of the stream or to the outer drip line of the associated riparian vegetation, whichever is greater. For Lake and Streambed Alteration Agreement (LSAA) notification purposes, vegetated and non-vegetated streambed are distinguished when riparian vegetation is present.

SECTION 4 RESULTS

4.1 DESKTOP ANALYSIS

Michael Baker thoroughly reviewed relevant literature and materials to preliminarily identify areas that may fall under the jurisdiction of the regulatory agencies. This section and Appendix A, *Documentation,* summarize the materials used during the literature review. In addition, Section 7, *References*, has a complete list of references used throughout the course of this delineation.

4.1.1 Watershed Review

The project site is located within the Silverwood Lake - West Fork Mojave River (Hydrologic Unit Code 180902080201) sub-watershed of the larger West Fork Mojave River watershed (Hydrologic Unit Code 18090208). The EPA assessed Lake Gregory as an Impaired Waterbody, identified with mercury and chlordane. The Mojave River watershed is located in Southern California, extending from the San Bernardino Mountains in San Bernardino County to the northeast and ending at Soda Lake, a dry lakebed in the Mojave Desert.

The project site occurs within Lake Gregory, which outlets to Houston Creek, is tributary to Trinity River, and flows into Silverwood Lake. Silverwood Lake outlets into the West Fork Mojave River, which is ultimately tributary to the Mojave River, a TNW.

4.1.2 Local Climate

Lake Gregory is located within the San Bernardino Mountains and has a semi-arid climate characterized by moderate annual rainfall with long hot summers and cool wet winters. Lake Arrowhead, which is located 4.8 miles east of Lake Gregory and is of a similar elevation, has an average minimum temperature of 28.9 degrees Fahrenheit (F) annually, and an average maximum temperature of 81.9 degrees F annually (Western Regional Climate Center 2023). The warmest months on average are July and August, at a maximum of 81.9 degrees F, and the coolest month on average is January at a minimum of 28.9 degrees F. Most precipitation occurs between November and March in the form of rain and snow, with occasional and steadily increasing precipitation through the fall and winter; the average total precipitation is 40.04 inches annually. Average total snowfall is 47.7 inches annually.

4.1.3 USGS 7.5-Minute Topographic Quadrangle

The project site is located within the unincorporated community of Crestline, within the San Bernardino Mountains, San Bernardino County, California (Figure 1, *Regional Vicinity*). Specifically, the project site is within Section 23 of Township 2 South, Range 4 West San Bernardino Meridian in the USGS San Bernardino North, California 7.5-minute topographic quadrangle (USGS 2023; Figure 2, *Project Vicinity*). The site is an artificially constructed lake with the surrounding topography sloping towards the lake. On-site elevations range from approximately 4,520 to 4,800 feet above mean sea level (amsl).

4.1.4 Aerial Photograph

Prior to the field visits, Michael Baker reviewed multiple aerial photographs from Google Earth for the project site, including images dated May 21, 2023, and June 06, 2022 (Google, Inc. 2023). Aerial photographs can be useful during the delineation process, as the photographs often indicate the presence of drainages and riparian vegetation within the boundaries of the project site. Based on the aerial imagery, the project site is composed primarily of open water surrounded by developed land with transportation use including Lake Drive and Lake Gregory Drive. Houston Creek is the main feature flowing into Lake Gregory from the southeast and out of the lake to the northeast. Ornamental vegetation and pine woodland habitat consistent with the surrounding area is noted throughout the project site. The project is primarily surrounded by developed land in all directions.

4.1.5 Soil Survey

Soils within the project site were researched prior to the field delineation using the *Custom Soil Resource Report for San Bernardino National Forest Area, California* (USDA 2023; Appendix A, *Documentation*). The presence of hydric soils is initially investigated by comparing the mapped soil series for the site to the County list of hydric soils. Soil surveys furnish soil maps and interpretations originally needed to provide technical assistance to farmers and ranchers; in guiding other decisions about soil selection, use, and management; and in planning, research, and disseminating the results of the research. In addition, soil surveys are now heavily utilized to obtain soil information with respect to potential wetland environments and jurisdictional areas (i.e., soil characteristics, drainage, and color). The soil series described below have been reported on-site.

Cedarpines-Stargazer-Urban land complex, 15 to 50 percent slopes (106)

The Cedarpines-Stargazer series consists of well-drained soils with parent material of colluvium and/or residuum weathered from granitoid. These soils are found on mountain slopes, with an elevation for this map unit at 4,330 to 6,460 feet. Mean annual precipitation is 26 to 41 inches. The mean annual air temperature is 52 to 55 degrees F with a frost-free period of 150 to 200 days.

In a typical profile of the Cedarpines series, 0 to 5 inches is cobbly sandy loam, 5 to 20 inches is cobbly sandy loam, 20 to 24 inches is extremely cobbly sand, and 24 to 39 inches is bedrock. The depth to the restrictive feature is 24 inches, and the depth to water table is more than 80 inches. This soil drainage class is well drained with no flooding and no ponding as identified in the soil survey. The available water capacity is low to moderately low (0.00 to 0.06 in/hr).

In a typical profile of the Stargazer series, 0 to 3 inches is moderately decomposed plant material, 3 to 16 inches is sandy loam, 16 to 28 inches is clay loam, 28 to 51 inches is loam, and 51 to 61 inches is bedrock. The depth to the restrictive feature is 39 to 69 inches, and the depth to water table is more than 80 inches. This soil drainage class is well drained with no flooding and no ponding as identified in the soil survey. The available water capacity is very low to moderately low (0.00 to 0.06 in/hr).

The map unit composition consists of minor components of Heapspeak (5%), Canyonspring (5%), and Runningspring (5%).

Cedarpines-Stargazer-Urban land complex, 30 to 50 percent slopes (107)

The Cedarpines-Stargazer series consists of well drained soils with parent material of colluvium and/or residuum weathered from granitoid. These soils are found on mountain slopes, with an elevation for this map unit at 4,350 to 6,980 feet. Mean annual precipitation is 26 to 41 inches. The mean annual air temperature is 52 to 55 degrees F with a frost-free period of 150 to 200 days.

In a typical profile of the Cedarpines series, 0 to 5 inches is cobbly sandy loam, 5 to 20 inches is cobbly sandy loam, 20 to 24 inches is extremely cobbly sand, and 24 to 39 inches is bedrock. The depth to the restrictive feature is 24 inches, and the depth to water table is more than 80 inches. This soil drainage class is well drained with no flooding and no ponding as identified in the soil survey. The available water capacity is low to moderately low (0.00 to 0.06 in/hr).

In a typical profile of the Stargazer series, 0 to 3 inches is moderately decomposed plant material, 3 to 16 inches is sandy loam, 16 to 28 inches is clay loam, 28 to 51 inches is loam, and 51 to 61 inches is bedrock. The depth to the restrictive feature is 39 to 69 inches, and the depth to water table is more than 80 inches. This soil drainage class is well drained with no flooding and no ponding as identified in the soil survey. The available water capacity is very low to moderately low (0.00 to 0.06 in/hr).

The map unit composition consists of minor components of Heapspeak (5%), Canyonspring (5%), and Runningspring (5%).

Grunney-Shayroad complex, 4 to 9 percent slopes (129)

These soil series occur at an elevation of 4,380 to 7,040 feet. Mean annual precipitation is 26 to 41 inches, with mean annual air temperature of 50 to 55 degrees F with a frost-free period of 1500 to 200 days.

The Grunney soil series consists of poorly drained soils with parent material of mixed alluvium, and these soils are found on floodplains. In a typical profile, 0 to 5 inches is muck, 5 to 15 inches is mucky loam, and 15 to 59 inches is stratified loamy sand to sandy loam to silt loam. The depth to the restrictive feature is more than 80 inches. This soil drainage class is poorly drained with occasional flooding and no ponding as identified in the soil survey. The available water capacity is moderately high to high (0.60 to 2.00 in/hr).

The Shayroad soil series consists of well drained soils with parent material of alluvium derived from granitoid, and these soils are found on alluvial fans. In a typical profile, 0 to 4 inches is sandy loam, 4 to 35 inches is sandy loam, 35 to 39 inches is sandy loam, and 39 to 59 is sandy loam. The depth to the restrictive feature is more than 80 inches. This soil drainage class is well drained with no flooding and no ponding as identified in the soil survey. The available water capacity is moderately high to high (0.60 to 2.00 in/hr).

The map unit composition consists of minor components of Aquents (5%).

Urban land (135)

This soil series is found on alluvial fans with an elevation of 4,400 to 6,870 feet. Mean annual precipitation is 21 to 42 inches, with mean annual air temperature of 48 to 55 degrees F with a frost-free period of 110 to 200 days. The map unit composition consists of minor components of Xerothents (5%).

Water areas (W)

This series consists of areas with 95 percent cover of water.

Hydric Soils List of California

The Hydric Soils List of California (USDA 2020) was reviewed to verify whether on-site soils are considered to be hydric. It should be noted that lists of hydric soils along with soil survey maps provide off-site ancillary tools to assist in wetland determinations, but they are not a substitute for field investigations. According to the soils list, Grunney-Shayroad Complex, 4 to 9 percent slopes (129) is listed as hydric (Appendix A, *Documentation*).

4.1.6 National Wetlands Inventory

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps were reviewed. According to the National Wetland Inventory, three aquatic features occur within the project site boundary:

- Lake Gregory is listed as a lacustrine system, limnetic subsystem, unconsolidated bottom, permanently flooded (L1UBH);
- an unnamed freshwater pond is listed as a palustrine system, unconsolidated shore (PUS); and
- Houston Creek is listed as a riverine system, intermittent subsystem, streambed, seasonally flooded (R4SBC).

The National Wetland Inventory map is in Appendix A, *Documentation*.

4.1.7 Flood Zone

The Federal Emergency Management Agency's National Flood Insurance Program was reviewed for available flood data within the project site. According to Flood Insurance Rate Map No. 06071C7935H, the project site is located within areas mapped as ZONE A (areas of 1% annual chance of flooding and 26% chance of flooding over 30 years) and Zone X (areas of 0.2% annual chance of flood hazard or areas of 1% annual chance of flood with average depth less than 1 foot or with drainage areas of less than 1 square mile). The Flood Insurance Rate Map is in Appendix A, *Documentation*.

4.1.8 National Hydrography Dataset

The National Hydrography Dataset was reviewed for available hydrography data within the project site using the USGS's National Map Advanced Viewer. According to the National Hydrography Dataset, one named lake, Lake Gregory, was noted within the project site; one named intermittent stream, Houston Creek, was noted through the eastern portion of the project site, generally flowing from south to north; and one unnamed pond was noted on the western edge of the project site. The National Hydrography Dataset map is in Appendix A, *Documentation*.

4.2 FIELD DELINEATION

Michael Baker biologists and regulatory specialists John Parent and Stephen Anderson visited the project site from approximately 8:00 a.m. to 1:30 p.m. on October 12, 2023, to document the extent of jurisdictional areas within the boundaries of the project site. No significant rain events had occurred in the 10 days prior to the site visit. Michael Baker encountered no substantial limitations to access during the site visit. Refer to Appendix B, *Site Photographs*, for representative photographs taken throughout the project site. Table 1 summarizes each aquatic resource investigated during the field delineation. Figure 4 and Figures 4A-4R, *USACE/RWQCB Jurisdictional Map*, and Figure 5 and Figures 5A-5R, *CDFW Jurisdictional Map*, show the limits of agency jurisdiction within the project site.

4.2.1 Lake Gregory

Lake Gregory is an artificial lake that receives water through runoff and snowmelt from the east and west forks of Houston Creek and outlets through a spillway at the northern part of the lake. According to the Draft Operations and Maintenance Plan (JS&TM 2023), the spillway elevation is 4,523.6 feet. The water level can be increased in elevation to 4,526.6 feet with the installation of flashboards across the secondary spillway to store additional runoff in the lake during the spring and summer months. The flashboards are typically removed on September 10 of each year. The normal water surface in the lake recedes to approximately 4,518.6 feet during the dry season due to evaporation, evapotranspiration, and infiltration losses. Previous jurisdictional delineations (Lilburn 2014 and Dudek 2019a) and 404 Permits (NWP 43, SPL-2016-00673-LRS; NWP 33 and NWP 16, SPL-2017-00260-JMV) mapped the OHWM of Lake Gregory at 4,525.5 feet amsl. This report conservatively utilizes 4,526 feet as the OHWM for the lake.

4.2.2 San Moritz Lodge Debris/Sediment Basin and Channel

The feature originates south of San Moritz Drive, which flows from south to north under San Moritz Drive through a large concrete culvert (Inlet 7), then continues north, terminating into Lake Gregory. The feature ranges in width from 10 to 70 feet along its length, has a defined bed and bank (OHWM), distinct change in vegetation from the surrounding habitat, and is tributary to Lake Gregory, which is ultimately tributary to the Mojave River, a TNW. The channel terminates at a sandbar within Lake Gregory that undergoes consistent scouring, erosion, and sediment build up resulting from the water flows of the lake. The 2019 delineation (Dudek 2019a) determined that although hydrophytic vegetation was present, given the lack of hydrology and hydric soils, this sandbar is a non-wetland WoUS and CDFW non-vegetated streambed.

4.2.3 Inlet Locations 1-34

A total of 34 inlet locations were visited around the lake during the field survey. These inlet locations vary in the number of drainage features (i.e., pipes) at each location, some only include one feature and others include multiple features. According to engineering designs provided by JS&TM, there are a total of 44 drainage features at the 34 locations. During the field survey, inlet features were observed at 23 of the 34 locations (1, 4-9a, 10-16, 21-25, 28-30, 33). These inlets are of varying width (12-60 inches) and design [corrugated metal pipes (CMP), corrugate plastic pipes (CPP), PVC, HDPE, solid metal, and concrete] and convey surface flows from stormwater and urban runoff into the lake at various locations throughout the project site, with some inlets appearing to terminate within the lake below the OHWM. The remaining 11

Inlet locations (2-3, 9b, 17-20, 26-27, 31-32) did not have visible drainage features and are assumed to be underground and directly connected to the lake.

Inlets 23-25 and 28-30 (Figures 4D-4G and 5D-5G), are located within the swim beach portion of the project site and are considered jurisdictional. The inlets are in close proximity to the OHWM of the lake, and flows travel overland from 2 to 10 feet before flows terminate at the lake. The channels at these features are shallow and range in width from 1 to 3 feet. The substrate consists of medium grained sand, and there is an absence of vegetation, except for few ornamental trees along the fringes of the beach area. Inlet 33 conveys flows from Library Basin directly into Lake Gregory and jurisdiction is included in Lake Gregory.

The inlets around the remaining portions of the lake (Inlets 1, 4-6, 8-9a, 10-14, 16, 21) are generally set away from the OHWM of the lake, and flows travel overland from 1 to 343 feet before flows terminate at the lake. The channels at these features range from shallow to heavily incised and range in width from 1 to 6 feet. OHWM was observed, as well as flow patterns, wrack, and water marks. Upland vegetation dominated by conifers, consisting primarily of pines (*Pinus* sp.), oaks (*Quercus* sp.), and white alder (*Alnus rhombifolia*) was present throughout. Inlet 5 (Figures 4K and 5K) outlets with flows travelling overland for 48 feet where the channel widens and becomes undefined with sheetflow to the OHWM. Inlet 8 (Figures 4O and 5O) outlets into a shallow rectangular concrete ditch that conveys flows overland for approximately 320 feet before terminating, where flows travel overland to the OHWM. Inlets 15 and 22 were observed but did not support jurisdictional indicators and are considered non-jurisdictional. Inlet 7 is associated with San Moritz Channel and is included above in Section 4.2.2. Inlet 11 is discussed in more detail below due to the presence of wetland conditions.

INLET 11

Inlet 11 is located along the eastern shore of Lake Gregory, west of San Moritz Way (Figures 4Q and 5Q). Surface flows are channelized and travel overland for approximately 138 feet before terminating at the OHWM of the lake. Vegetation within the uplands was consistent with the project site (i.e., disturbed mixed conifer forest); however, hydrophytic vegetation in the form of a red willow (*Salix laevigata*) thicket was observed within a low-lying area around the channelized flows from Inlet 11.

To assess for the presence of hydric soils and determine the presence/absence of wetlands, two soil pits (SP1 and SP2, Figures 4Q and 5Q) were excavated where wetland hydrology or hydrophytic vegetation was observed. SP1 was excavated within the low-lying area in proximity to Inlet 11. SP1 was dug to the depth of the water table, 12 inches, and there were three observed horizons. At 0 to 1 inch, a texture of loamy sand with a matrix color of 10YR 3/1 when moist with no redoximorphic features was observed. At 1 to 8 inches, a texture of coarse sand with a matrix color of 10YR 4/3 with no redoximorphic features was observed. At 8 to 12 inches, a texture of loamy sand with a matrix color of 10YR 2/2 with no redoximorphic features was observed. The odor of hydrogen sulfide (A4), a hydric soil indicator, was detected during excavation of SP1. Wetland hydrology indicators in the vicinity of SP1 included water marks (B1), sediment deposits (B2), drift deposits (B3), and water-stained leaves (B9).

SP2 was excavated within the uplands and outside of the low-lying area a short distance away. SP2 was dug to a depth of 22 inches with two observed horizons. At 0 to 2 inches was an organic debris layer. At 2

to 22 inches, a texture of sand with a matrix color of 10YR 5/4 with no redoximorphic features was observed. The odor of hydrogen sulfide was not detected during excavation of SP2. No hydrology indicators or hydrophytic vegetation were observed.

Wetland Determination Data Forms – Arid West Region are in Appendix C, *Wetland Data Forms*.

4.2.4 Aquatic Feature 1

Aquatic Feature 1 (AF-1) is located along the southern shore of Lake Gregory east of the parking lot (Figures 4I and 5I). Flows originate along the slopes to the north of San Moritz Drive where surface flows converge and become channelized. The channel ranges in width from 1 to 2 feet and is shallow (2-6 inches), conveying flows for approximately 37 feet before terminating at the OHWM of the lake. Vegetation is dominated by disturbed mixed conifer forest.

4.2.5 Library Debris/Sediment Basin

Library Basin is an approximately 0.85-acre debris/sediment basin that occurs west of Lake Gregory (Figures 4F and 5F). According to the 2014 Jurisdictional Delineation for Lake Gregory Sediment Management and Bioretention Program (Lilburn 2014), this feature was mapped as wetland under the jurisdiction of USACE, RWQCB, and CDFW. This flood control basin is routinely maintained to be clear of vegetation. The 2019 delineation update (Dudek 2019a) determined the feature to contain an OHWM characterized by a defined bed and bank, surface water, change in vegetation, and saturation. A series of inlets are located along the western, northeastern, and southeastern banks. Flows continue east under Lake Gregory Drive through three 60-inch concrete culverts (Inlet 033), terminating into Lake Gregory. This feature was observed to contain hydrophytic vegetation consistent with the previous delineation. A soil pit was not excavated at this location; however, hydric soils were assumed based on the presence of standing water combined with hydrophytic vegetation being present.

SECTION 5 SUMMARY OF FINDINGS

This delineation was conducted to document the jurisdictional authority of the USACE, RWQCB, and CDFW within the project site. This report presents Michael Baker's best efforts at determining the extent of jurisdictional features using the most up-to-date regulations, written policy, and guidance from the regulatory agencies. As with any aquatic resource delineation, however, only the regulatory agencies can make a final determination of jurisdictional boundaries.

5.1 U.S. ARMY CORPS OF ENGINEERS

5.1.1 Non-Wetland Waters of the U.S. Determination

Lake Gregory, numerous inlets (Inlets 1, 4-6, 8, 9a, 10-14, 16, 21, 23-25, 28-30), AF-1, and San Moritz Channel/Sediment Basin (including Inlet 7) qualify as USACE non-wetland WoUS. Evidence of an OHWM was noted within the boundaries of the project site in association with these features. Therefore, all these features would be subject to regulation under Section 404 of the CWA, and USACE jurisdiction totals approximately 78.85 acre (2,112 linear feet) of non-wetland WoUS. Table 1, *Aquatic Resource Jurisdictional Limits within the Project Site*, shows a breakdown of the acreages of USACE jurisdiction, and Figure 4, *USACE/RWQCB Jurisdictional Map*, shows locations of jurisdictional features. To more accurately reflect jurisdiction, those inlets that terminate directly at the OHWM of Lake Gregory or within the lake proper (2-3, 9b, 17-20, 26-27, and 31-32), are accounted for within Lake Gregory.

5.1.2 Wetland Waters of the U.S. Determination

Library Basin and a portion of Inlet 11 qualify as wetland WoUS. In addition to evidence of an OHWM associated with these features, indicators of hydrology, hydric soils, and hydrophytic vegetation were present within Library Basin and Inlet 11. Therefore, Library Basin and a portion of Inlet 11 would be subject to regulation under Section 404 of the CWA, and USACE jurisdiction totals approximately 0.53 acre (344 linear feet) of wetland WoUS. Refer to Table 1, *Aquatic Resource Jurisdictional Limits within the Project Site* and Figure 4, *USACE/RWQCB Jurisdictional Map*.

TABLE 1. AQUATIC RESOURCE JURISDICTIONAL LIMITS WITHIN THE PROJECT SITE

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Lake Gregory	Lacustrine	Non-Wetland	77.98 (N/A)	0.00 (0)	77.98 (N/A)	0.00 (0)	77.98 (N/A)	0.00 (0)	0.29
Library Basin	Riverine	Wetland	0.00 (0)	0.41 (235)	0.00 (0)	0.41 (235)	0.00 (0)	0.41 (235)	0.00
San Moritz Channel Basins	Lacustrine	Non-Wetland	0.79 (993)	0.00 (0)	0.79 (993)	0.00 (0)	0.00 (0)	1.18 (993)	0.00
Inlet 1	Riverine	Non-Wetland	0.0002 (5)	0.00 (0)	0.0002 (5)	0.00 (0)	0.00 (0)	0.0002 (5)	0.00
Inlet 2	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 3	Not observed, assumed direct connection to Lake		N/A,	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 4	Riverine	Non-Wetland	0.004 (83)	0.00 (0)	0.004 (83)	0.00 (0)	0.00 (0)	0.003 (83)	0.00
Inlet 5	Riverine	Non-Wetland	0.003 (48)	0.00 (0)	0.003 (48)	0.00 (0)	0.00 (0)	0.003 (48)	0.00
Inlet 6	Riverine	Non-Wetland	0.005 (70)	0.00 (0)	0.005 (70)	0.00 (0)	0.00 (0)	0.004 (70)	0.00
Inlet 7	Observed, included with San Moritz Channel		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 8	Riverine	Non-Wetland	0.039 (344)	0.00 (0)	0.039 (344)	0.00 (0)	0.00 (0)	0.039 (344)	0.00
Inlet 9a	Riverine	Non-Wetland	0.002 (47)	0.00 (0)	0.002 (47)	0.00 (0)	0.00 (0)	0.002 (47)	0.00
Inlet 9b	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 10	Riverine	Non-Wetland	0.002 (75)	0.00 (0)	0.002 (75)	0.00 (0)	0.00 (0)	0.002 (75)	0.00
Inlet 11	Riverine	Non-Wetland and Wetland	0.002 (19)	0.12 (109)	0.115 (109)	0.12 (109)	0.00 (0)	0.115 (109)	0.00

TABLE 1, CONTINUED

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Inlet 12	Riverine	Non-Wetland	0.005 (103)	0.00 (0)	0.005 (103)	0.00 (0)	0.00 (0)	0.005 (103)	0.00
Inlet 13	Riverine	Non-Wetland	0.006 (125)	0.00 (0)	0.006 (125)	0.00 (0)	0.00 (0)	0.006 (125)	0.00
Inlet 14	Riverine	Non-Wetland	0.002 (44)	0.00 (0)	0.002 (44)	0.00 (0)	0.00 (0)	0.002 (44)	0.00
Inlet 15	Observed, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00
Inlet 16	Riverine	Non-Wetland	0.002 (36)	0.00 (0)	0.002 (36)	0.00 (0)	0.00 (0)	0.002 (36)	0.00
Inlet 17	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 18	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 19	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 20	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 21	Riverine	Non-Wetland	0.005 (29)	0.00 (0)	0.005 (29)	0.00 (0)	0.00 (0)	0.005 (29)	0.00
Inlet 22	Observed, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00
Inlet 23	Riverine	Non-Wetland	0.0001 (5)	0.00 (0)	0.0001 (5)	0.00 (0)	0.00 (0)	0.0001 (5)	0.00
Inlet 24	Riverine	Non-Wetland	0.0006 (9)	0.00 (0)	0.0006 (9)	0.00 (0)	0.00 (0)	0.0006 (9)	0.00
Spillway 25	Riverine	Non-Wetland	0.0008 (18)	0.00 (0)	0.0008 (18)	0.00 (0)	0.00 (0)	0.0008 (18)	0.00
Inlet 26	Not observed, underground, outlets to #25		N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 1, CONTINUED

Feature Name	Cowardin Class	Aquatic Feature Class	Acreage (Linear Feet)						
			USACE		RWQCB		CDFW		
			Non-Wetland WoUS	Wetland WoUS	Non-Wetland WoS	Wetland WoS	Lake	Streambed	Riparian
Inlet 27	Not observed, underground, outlets to #25		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 28	Riverine	Non-Wetland	0.0004 (10)	0.00 (0)	0.0004 (10)	0.00 (0)	0.00 (0)	0.0004 (10)	0.00
Inlet 29	Riverine	Non-Wetland	0.0004 (8)	0.00 (0)	0.0004 (8)	0.00 (0)	0.00 (0)	0.0004 (8)	0.00
Inlet 30	Riverine	Non-Wetland	0.00009 (4)	0.00 (0)	0.00009 (4)	0.00 (0)	0.00 (0)	0.00009 (4)	0.00
Inlet 31	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 32	Not observed, assumed direct connection to Lake		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inlet 33	Observed, outlets directly into Lake, not jurisdictional		0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00
AF- 1	Riverine	Non-Wetland	0.002 (37)	0.00 (0)	0.002 (37)	0.00 (0)	0.00 (0)	0.002 (37)	0.00
TOTAL			**78.85 (2,112)**	**0.53 (344)**	**78.85 (2,112)**	**0.53 (344)**	**77.98**	**1.78 (2,437)**	**0.29**

5.2 REGIONAL WATER QUALITY CONTROL BOARD

5.2.1 Non-Wetland Waters of the State Determination

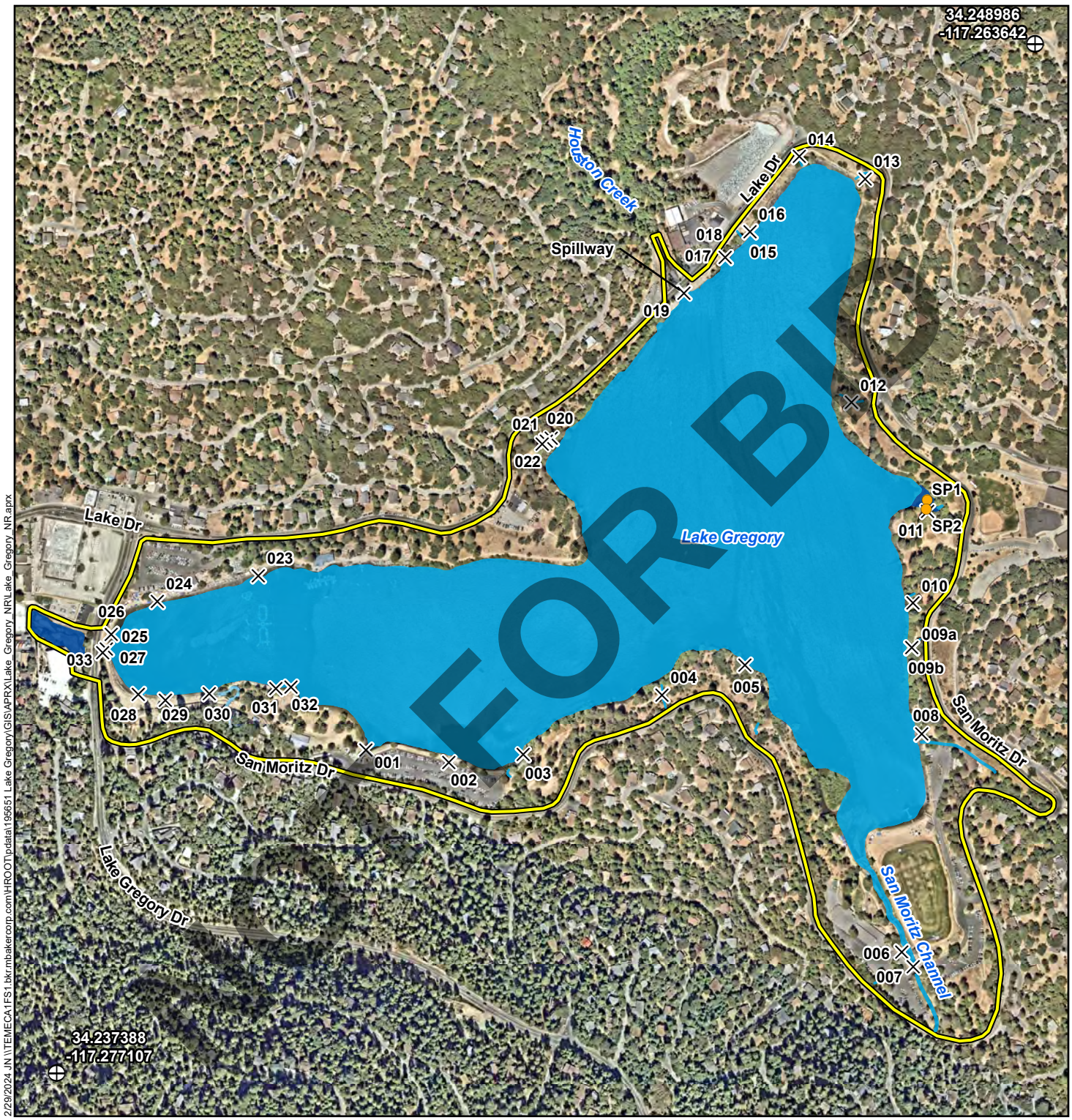
Evidence of an OHWM was noted within the boundaries of the project site in association with Lake Gregory, numerous inlets (Inlets 1, 4-6, 8, 9a, 10-14, 16, 21, 23-25, 28-30), AF-1, and San Moritz Channel/Sediment Basin (including Inlet 7). No isolated non-federal aquatic features were observed within the boundaries of the project site. Therefore, the jurisdiction of the RWQCB reflects that of the USACE and totals approximately 78.85 acres (2,112 linear feet) of non-wetland Waters of the State.

5.2.2 Wetland Waters of the State Determination

An area must exhibit all three wetland parameters described in the 2008 *Regional Supplement* to be considered a USACE jurisdictional wetland. In addition, the state wetland definition and delineation procedures are largely consistent with the three-parameter approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology implemented by the USACE. One exception, however, is that an area can lack vegetation and still satisfy the parameter for hydrophytic vegetation, thus qualifying the area as wetland Waters of the State if the hydric soil and wetland hydrology parameters are also fulfilled. Based on the results of the field delineation, it was determined that Library Basin and Inlet 11 contained RWQCB wetlands that coincide with the USACE jurisdictional wetland WoUS as there was an OHWM associated with these features as well as indicators of hydrology, hydric soils, and hydrophytic vegetation. RWQCB jurisdictional wetlands total approximately 0.53 acre (344 linear feet) of wetland Waters of the State. Refer to Table 1, *Aquatic Resource Jurisdictional Limits within the Project Site* and Figure 4, *USACE/RWQCB Jurisdictional Map*.

5.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Lake Gregory, Library Basin, San Moritz Channel/Basin (including Inlet 7), numerous inlets (Inlets 1, 4-6, 8, 9a, 10-14, 16, 21, 23-25, 28-30), and AF-1 are considered to be CDFW jurisdictional lake, streambed, and associated riparian habitats. It was determined that 77.98 acres of CDFW jurisdictional lake, 1.78 acres of CDFW jurisdictional streambed (1.67 acre of CDFW non-vegetated streambed and 0.11 acre of vegetated streambed) as well as 0.29 acre of associated riparian habitat are located within the project site (Table 1, *Aquatic Resource Jurisdictional Limits within the Project Site* and Figure 5, *CDFW Jurisdictional Map*).



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Soil Pit
- Inlet Location

Michael Baker INTERNATIONAL

0 290 580 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

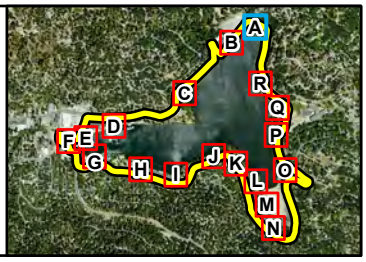
USACE/RWQCB Jurisdictional Map

Figure 4

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

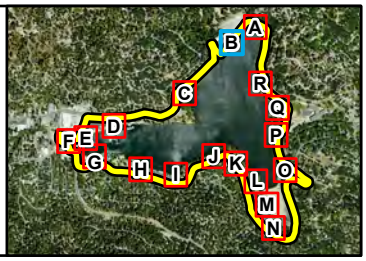
USACE/RWQCB Jurisdictional Map

Figure 4A

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

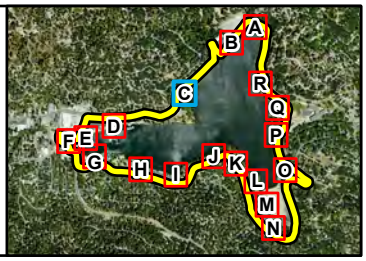
USACE/RWQCB Jurisdictional Map

Figure 4B

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

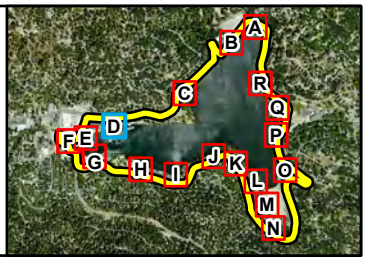
USACE/RWQCB Jurisdictional Map

Figure 4C

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

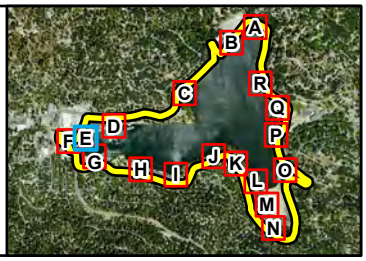
USACE/RWQCB Jurisdictional Map

Figure 4D

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

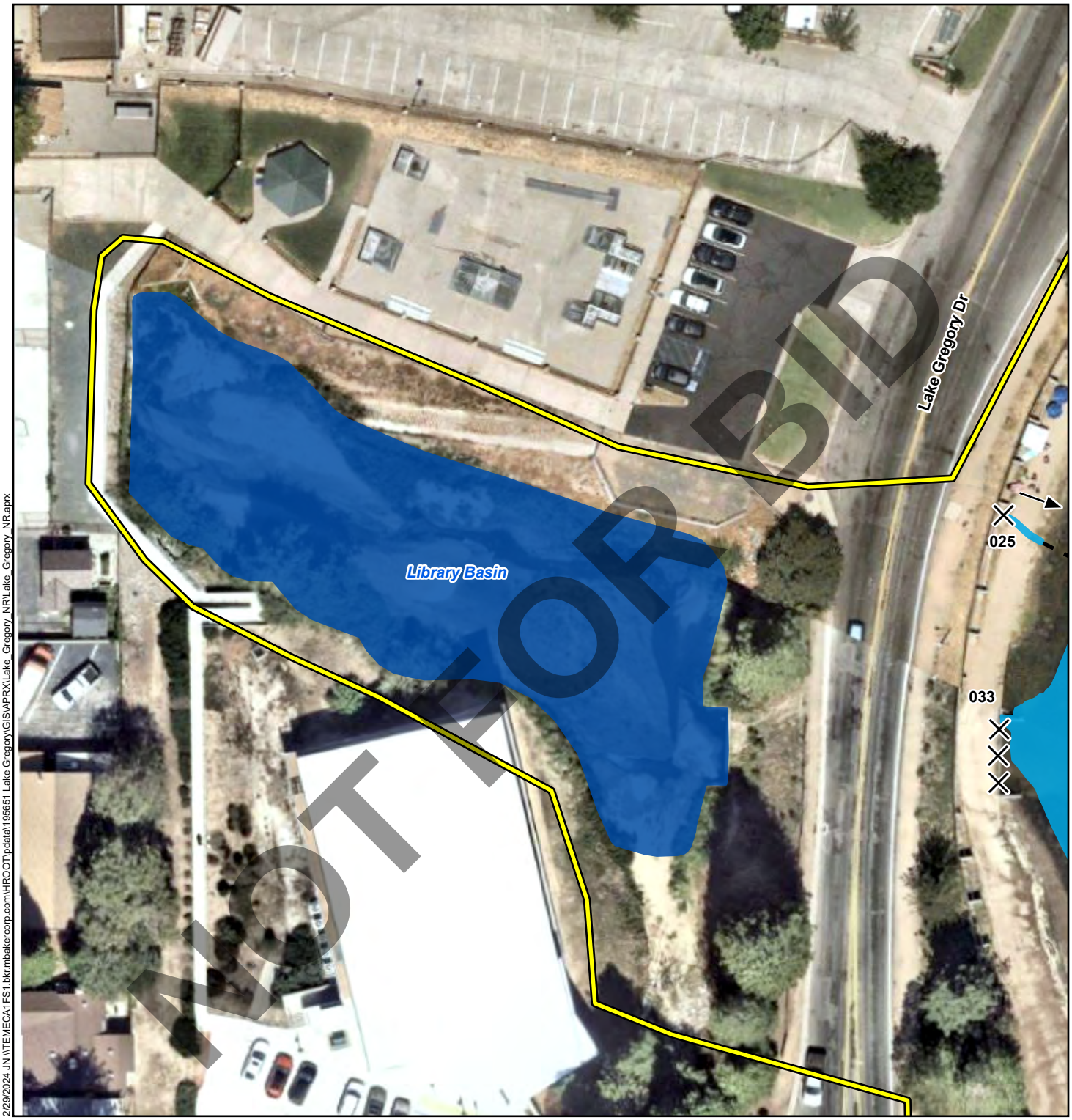
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

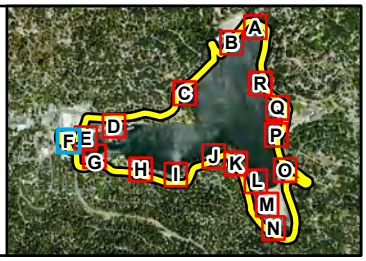
Figure 4E



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

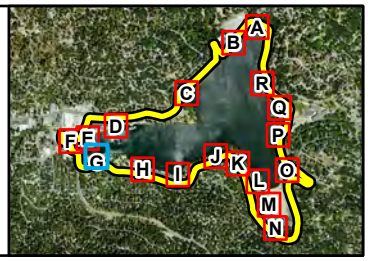
USACE/RWQCB Jurisdictional Map

Figure 4F

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

Figure 4G

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit

Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

Figure 4H

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit

Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

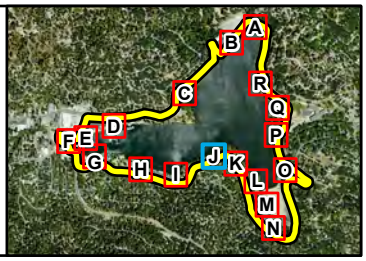
USACE/RWQCB Jurisdictional Map

Figure 4I

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

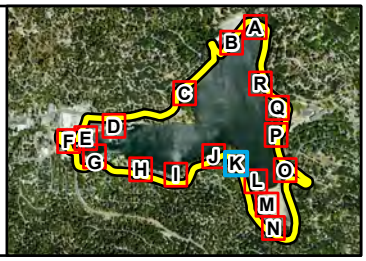
USACE/RWQCB Jurisdictional Map

Figure 4J

2/29/2024 JN \\TEMECA1FS1.bkrmbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

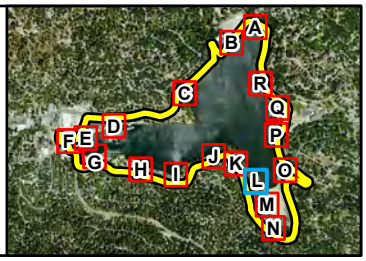
USACE/RWQCB Jurisdictional Map

Figure 4K

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

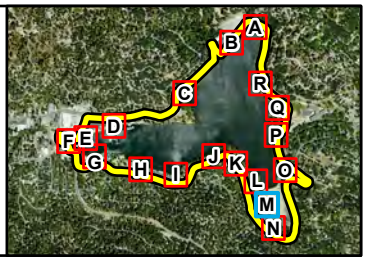
USACE/RWQCB Jurisdictional Map

Figure 4L

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

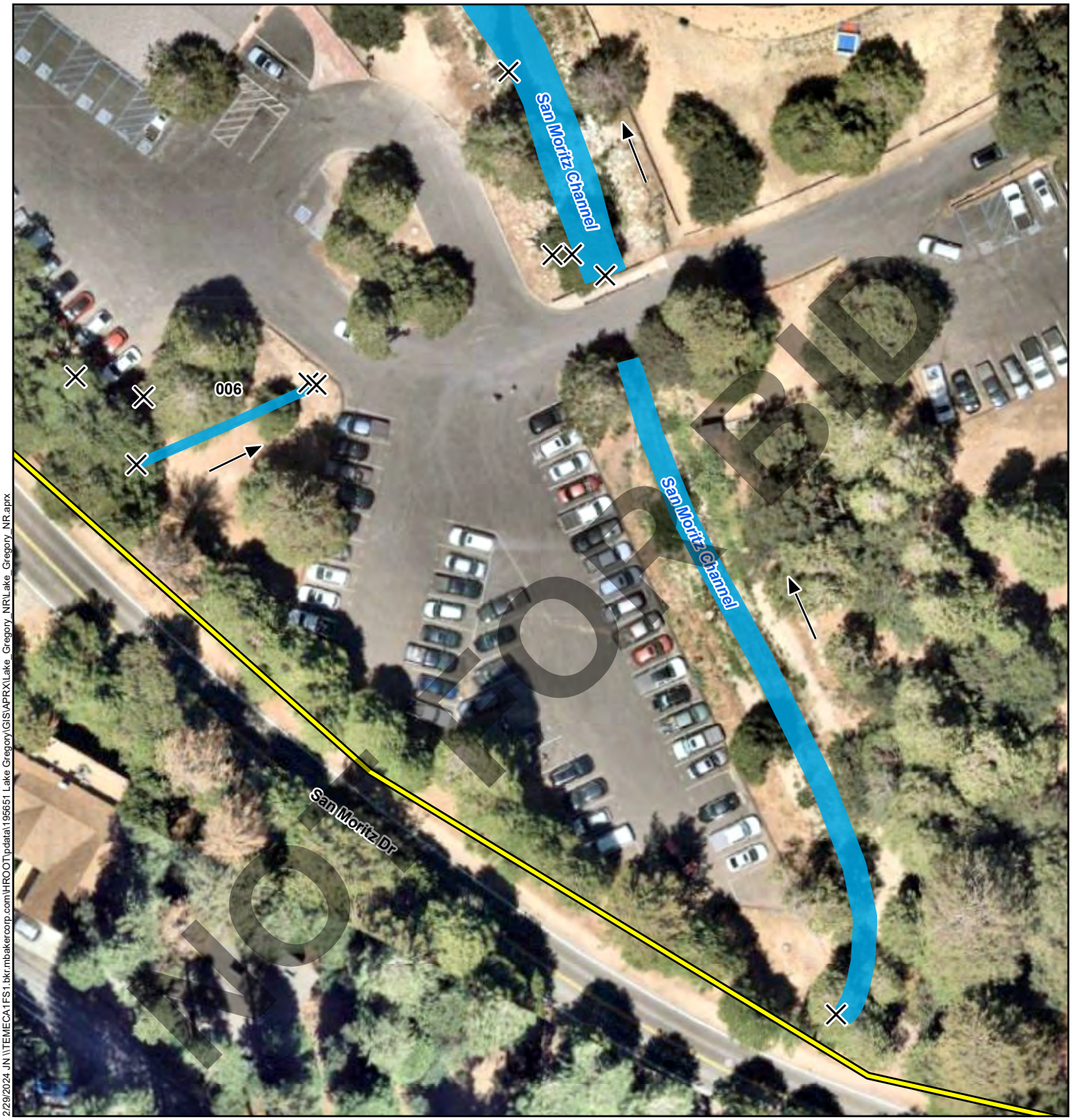
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

Figure 4M



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit

Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

Figure 4N

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit

Michael Baker INTERNATIONAL

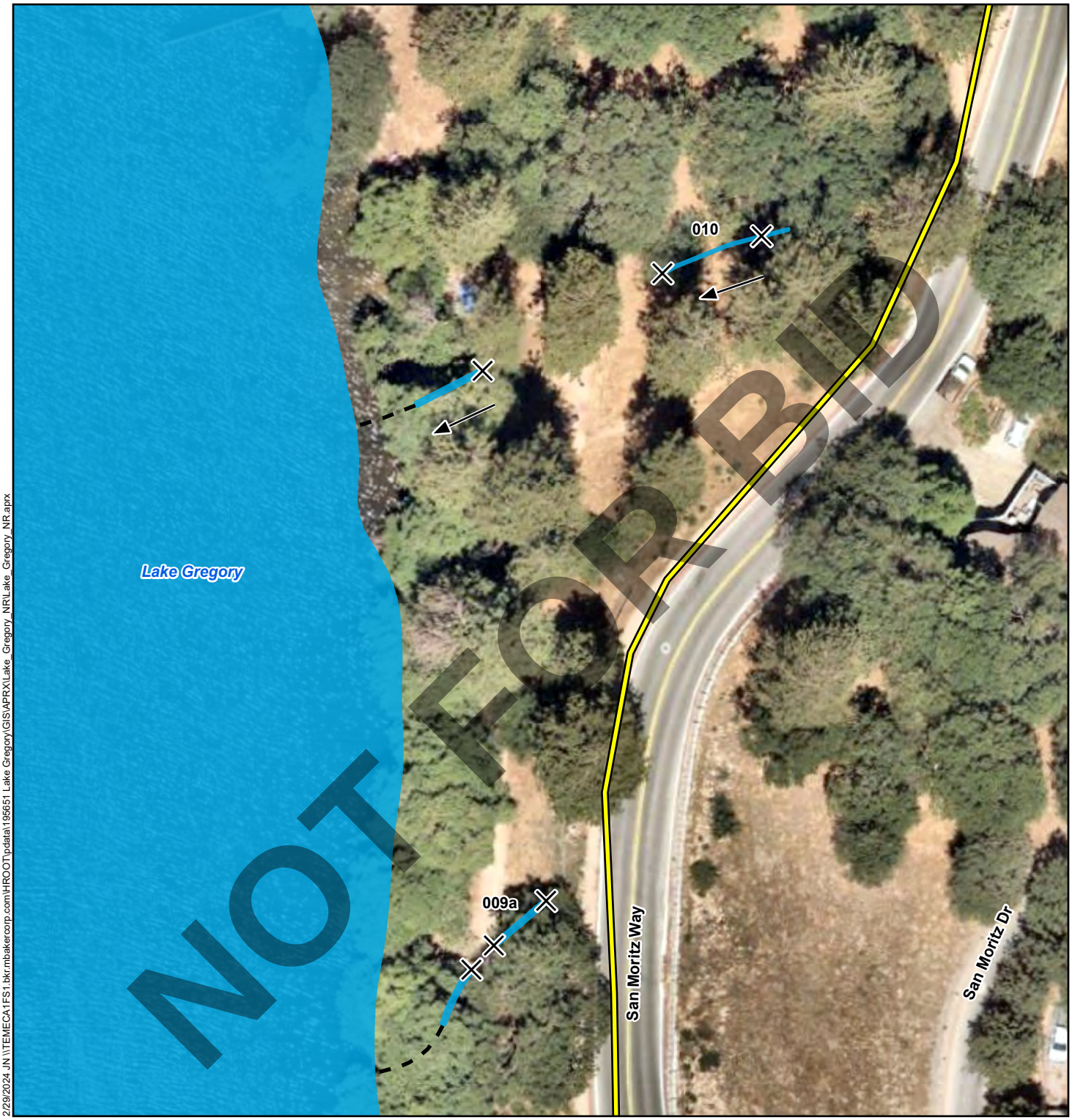
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

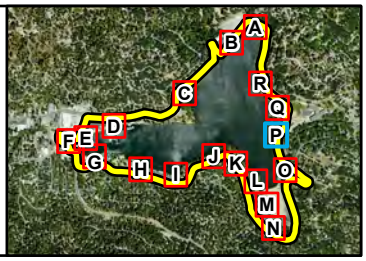
Figure 4O



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

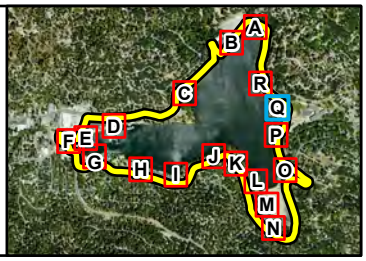
USACE/RWQCB Jurisdictional Map

Figure 4P

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

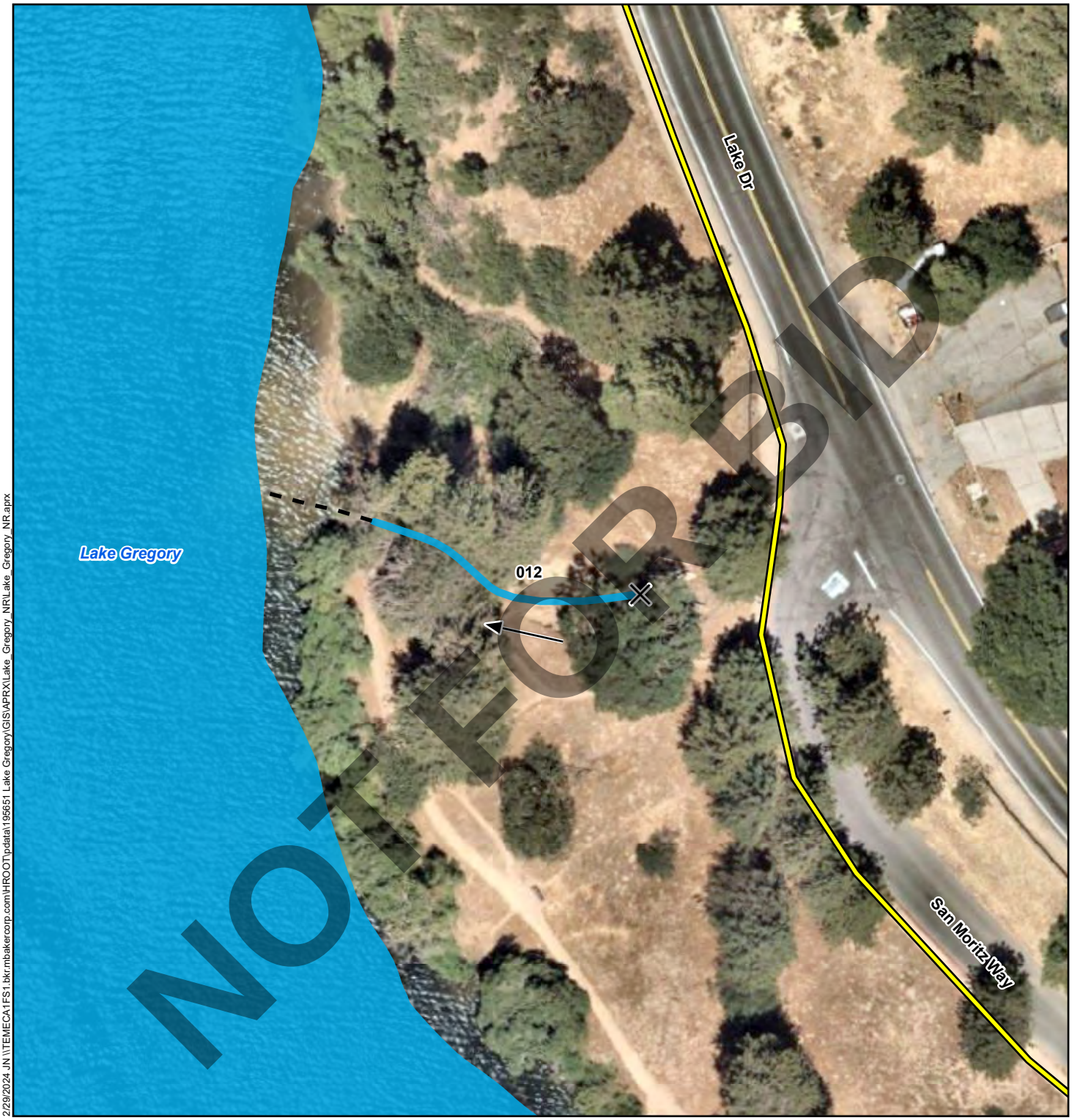
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

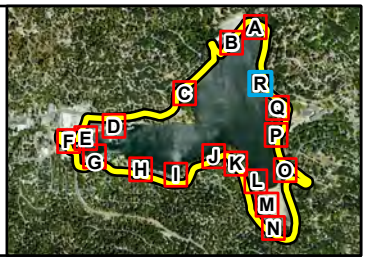
Figure 4Q



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Wetland Waters of the U.S. (0.53 acre)
- Non-Wetland Waters of the U.S. (78.85 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet
- Soil Pit



Michael Baker INTERNATIONAL

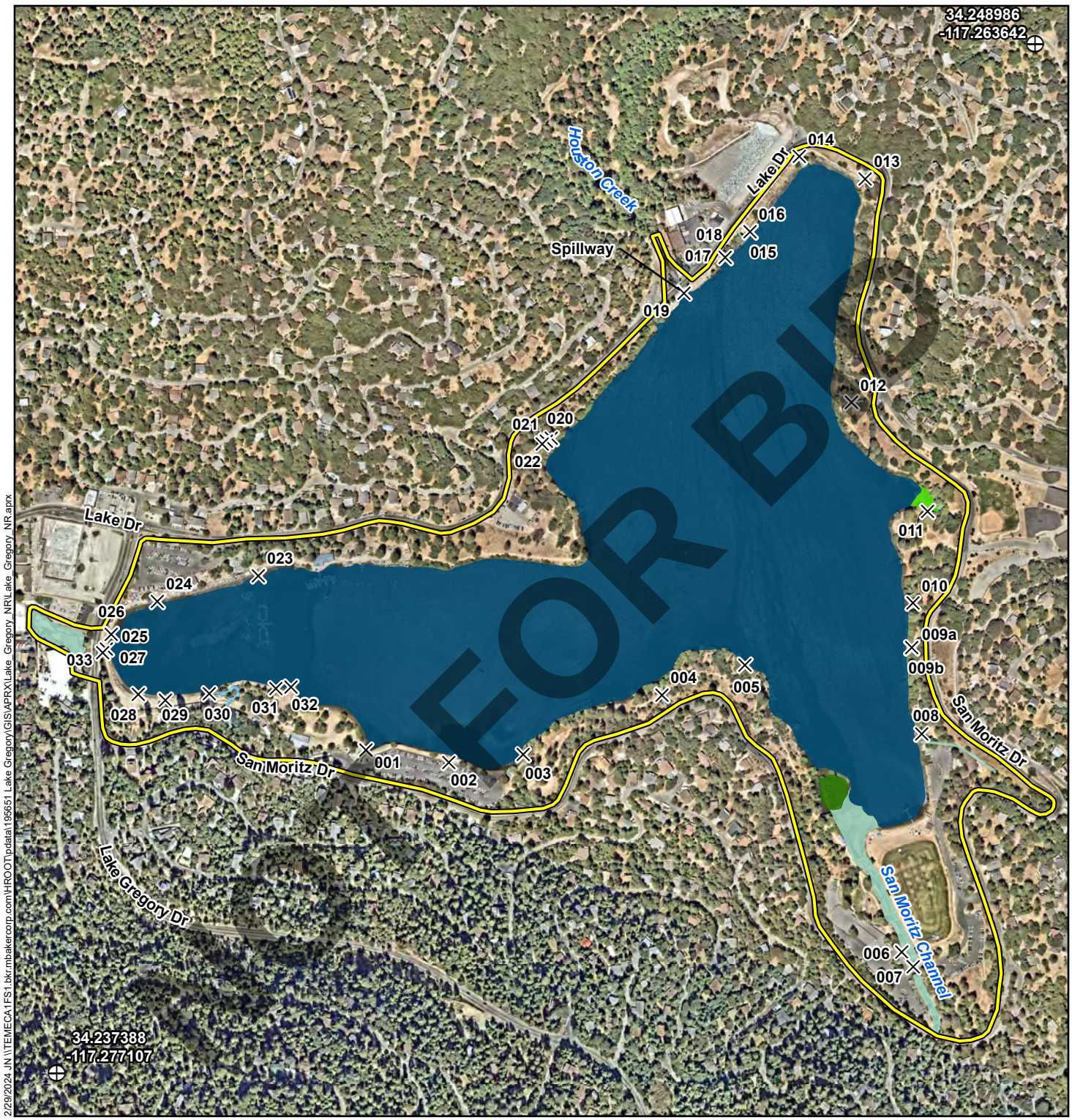
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

USACE/RWQCB Jurisdictional Map

Figure 4R



Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Inlet Location

Michael Baker INTERNATIONAL

0 290 580 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

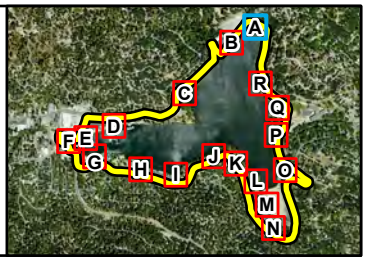
CDFW Jurisdictional Map

Figure 5

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

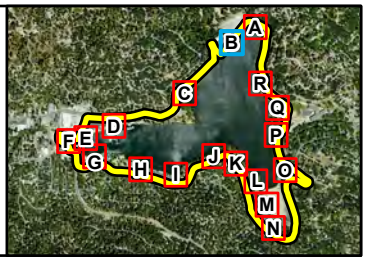
CDFW Jurisdictional Map

Figure 5A

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

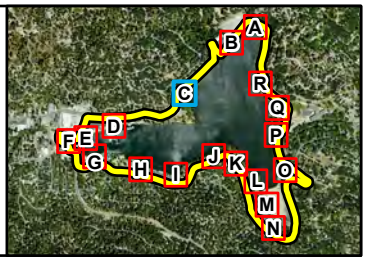
CDFW Jurisdictional Map

Figure 5B

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NRI\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

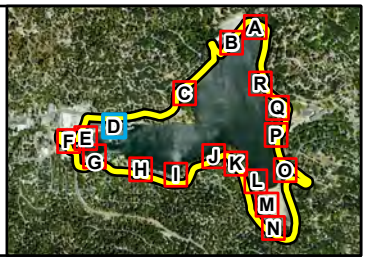
CDFW Jurisdictional Map

Figure 5C

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

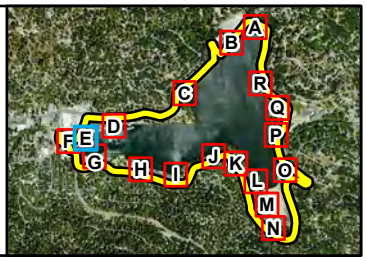
CDFW Jurisdictional Map

Figure 5D

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

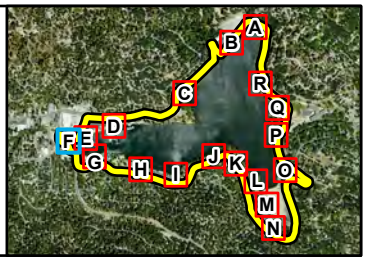
CDFW Jurisdictional Map

Figure 5E

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

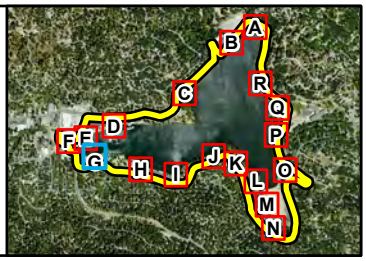
CDFW Jurisdictional Map

Figure 5F

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

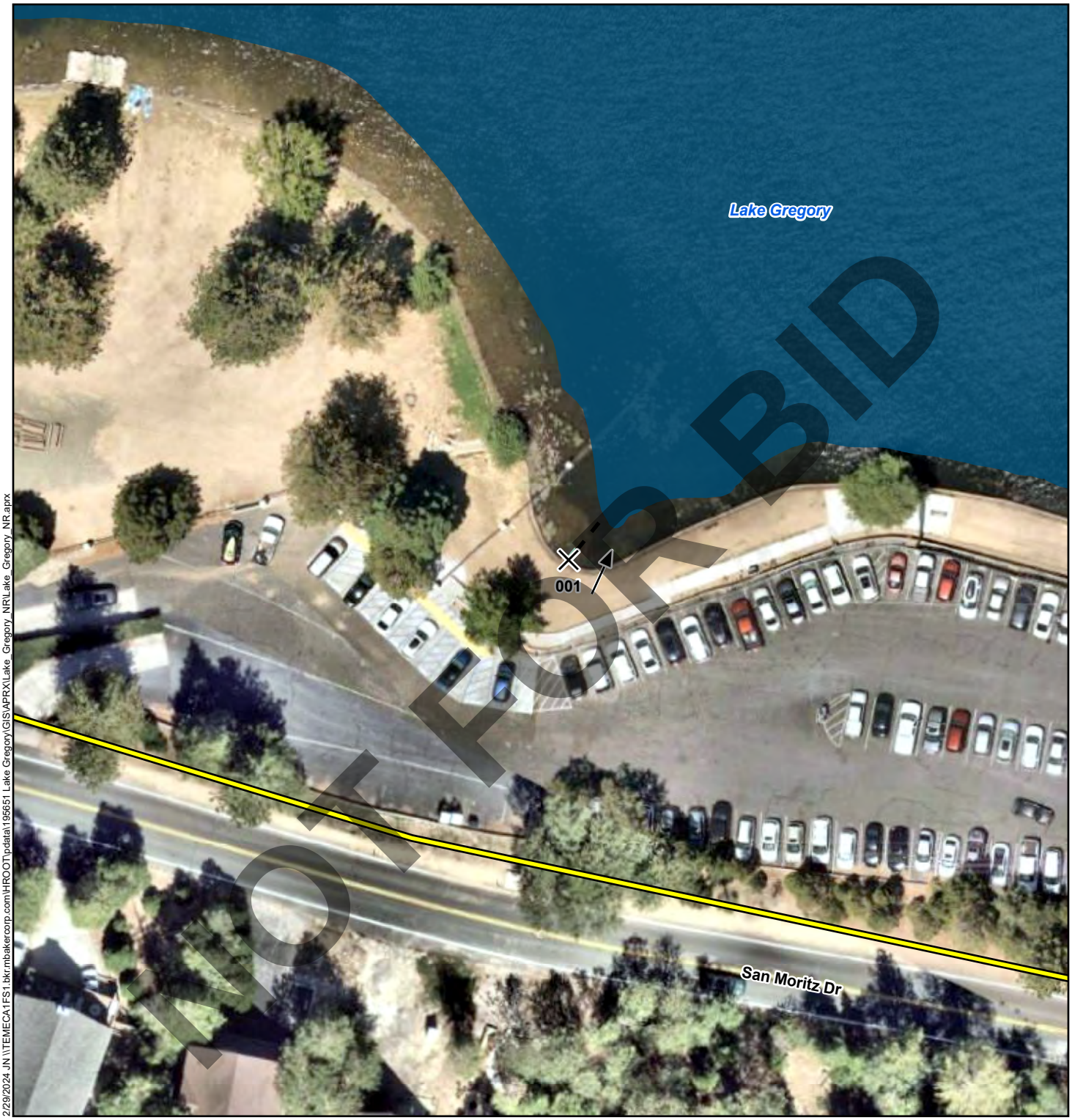
0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

CDFW Jurisdictional Map

Figure 5G



2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet

Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

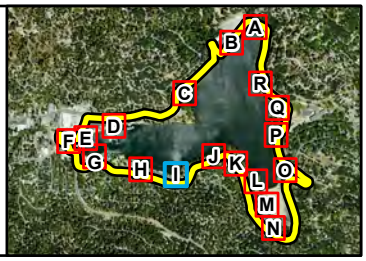
CDFW Jurisdictional Map

Figure 5H

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

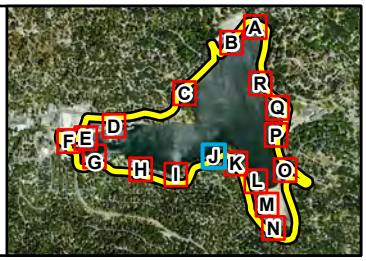
CDFW Jurisdictional Map

Figure 5I

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

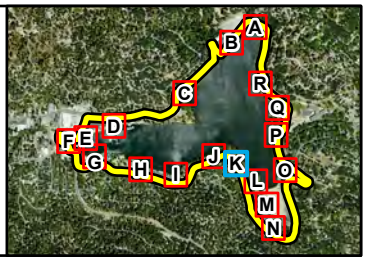
CDFW Jurisdictional Map

Figure 5J

2/29/2024 JN \\TEMECA1FS1.bkrmbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

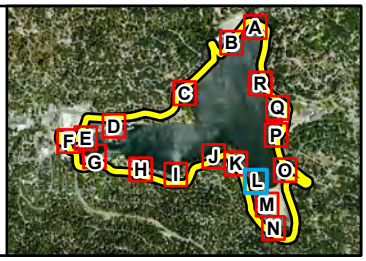
CDFW Jurisdictional Map

Figure 5K

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

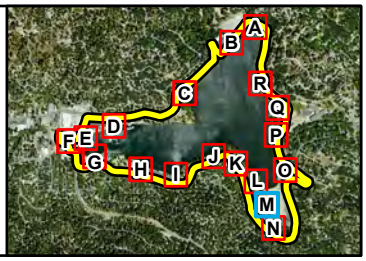
CDFW Jurisdictional Map

Figure 5L

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

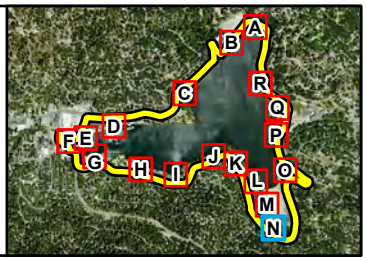
CDFW Jurisdictional Map

Figure 5M

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

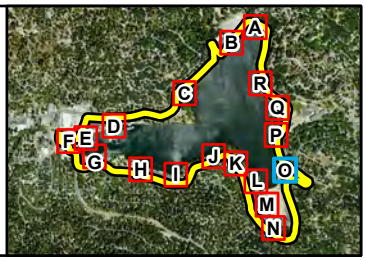
CDFW Jurisdictional Map

Figure 5N

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NRI\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

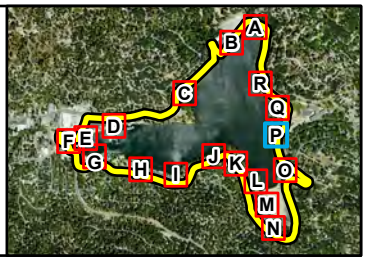
CDFW Jurisdictional Map

Figure 5O

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

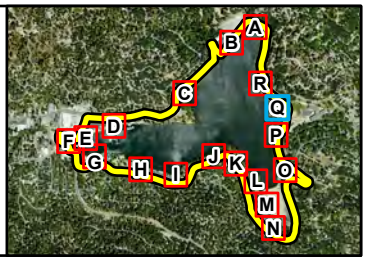
CDFW Jurisdictional Map

Figure 5P

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

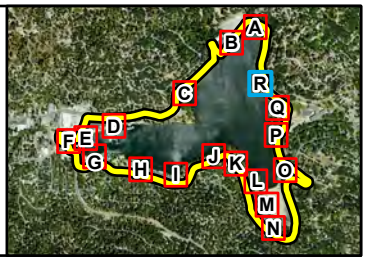
CDFW Jurisdictional Map

Figure 5Q

2/29/2024 JN \\TEMECA1FS1.bkr.mbakercorp.com\HROOT\pdata\195651 Lake Gregory\GIS\APRX\Lake_Gregory_NR\Lake_Gregory_NR.aprx

Legend

- Project Site
- Reference Point
- Associated Riparian Vegetation (0.29 acre)
- Vegetated Streambed (0.11 acre)
- Non-Vegetated Streambed (1.67 acres)
- CDFW Lake (77.98 acres)
- Discontinuous Overland Sheet Flow
- Flow Direction
- Inlet



Michael Baker INTERNATIONAL

0 25 50 Feet

Source: Nearmap (09/2023)

LAKE GREGORY SITEWIDE SEDIMENT MANAGEMENT PROJECT
AQUATIC RESOURCES DELINEATION REPORT

CDFW Jurisdictional Map

Figure 5R

SECTION 6 REGULATORY APPROVAL PROCESS

This report has been prepared to delineate the USACE, RWQCB, and CDFW jurisdictional authority within the project site. Below is a summary of the various permits/authorizations that would be required prior to temporarily or permanently impacting on-site jurisdictional features.

6.1 U.S. ARMY CORPS OF ENGINEERS

The USACE regulates discharges of dredged or fill materials into WoUS and wetlands pursuant to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Based on a review of the conceptual site plan, approximately 0.53 acre (344 linear feet) of wetland WoUS and 78.85 acres (2,112 linear feet) of non-wetland WoUS USACE jurisdiction occur within the project site. Any impacts within USACE jurisdiction would require the project proponent to obtain a Section 404 permit from the USACE prior to impacts occurring within USACE jurisdictional areas.

6.2 REGIONAL WATER QUALITY CONTROL BOARD

The RWQCB regulates discharges to surface waters under the CWA and the Porter-Cologne Act. Based on a review of the conceptual site plan, approximately 0.53 acre (344 linear feet) of wetland WoUS and 78.85 acres (2,112 linear feet) of non-wetland WoUS of RWQCB jurisdiction occurs within the project site. Any impacts within RWQCB jurisdiction would require the project proponent to obtain a Section 401 Water Quality Certification from the RWQCB prior to impacts occurring within RWQCB jurisdictional areas.

6.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The CDFW regulates substantial alterations to streambed under Section 1602 of the CFGC. Based on a review of the conceptual site plan, approximately 77.98 acres of CDFW jurisdictional lake, 1.78 acres (2,437 linear feet) of CDFW jurisdictional streambed, and 0.29 acre of CDFW associated riparian vegetation occur within the project site. Formal notification to CDFW would be required prior to commencement of any construction activities within the CDFW jurisdictional areas. The CDFW also requires compliance with the California Environmental Quality Act (CEQA) prior to issuing the final LSAA. In addition, a notification fee is required, which is calculated based on project costs within CDFW jurisdictional areas.

6.4 RECOMMENDATIONS

Based on the results of this delineation and the anticipated impacts to jurisdictional areas, permit applications for a Section 404, Section 401, and Lake and Streambed Alteration Agreement should be prepared and submitted to the USACE, RWQCB, and CDFW, respectively. As part of the regulatory permitting process, this delineation will be forwarded to each of the regulatory agencies for their concurrence. The concurrence/receipt would be valid up to five years and would solidify findings noted within this report.

SECTION 7 REFERENCES

Brady, Roland H. III and Kris Vyverberg. 2013a. MESA - *A Field Guide to Mapping Episodic Stream Activity (MESA)*. Final draft V5: July 3, 2013.

California Department of Fish and Wildlife. n.d. *Lake and Streambed Alteration Program*. https://www.wildlife.ca.gov/Conservation/LSA.

Dudek. 2019a. *Jurisdictional Waters Delineation Update Report for the Lake Gregory Sediment Management and Bioretention Project, Unincorporated Community of Crestline, San Bernardino County, California*. Letter report prepared for Ms. Beahta Davis, County of San Bernardino.

Dudek. 2019b. *Lake Gregory Operations and Maintenance Manual.*

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Vicksburg, MS: US Army Engineer Waterways Experiment Station.

Federal Emergency Management Agency. 2008. National Flood Hazard Layer Viewer. *Flood Insurance Rate Map. No. 06071C7935H*. https://msc.fema.gov/portal/home.

Google, Inc. 2023. Google Earth Pro Imagery Version 7.3.6.9345, build date December 29, 2022. Aerial image dated May 30, 2022.

JS&TM (J. Smith and T. Muli). 2023. Draft Lake Gregory Operations and Maintenance Manual. Prepared for San Bernardino County Special Districts.

Lichvar, R. W., and S. M McColley. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. ERDC/CRREL TR-08-12. Hanover, NH: US Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Lilburn (Lilburn Corporation). 2014. *Jurisdictional Delineation for Lake Gregory Sediment Management and Bioretention Program.* Prepared for County of San Bernardino Regional Parks Department.

Munsell Color. 2012. *Munsell Soil Color Charts*. X-rite. Grand Rapids, Michigan.

State Water Resources Control Board. April 2019. *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. Effective May 28, 2020. https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html.

USACE (U.S. Army Corps of Engineers). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Nobel. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2016. *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports*. January 2016. https://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/Minimum_Standards_for_Delineation_with_Template-final.pdf.

USACE. 2018. *National Wetland Plant List, Version 3.4.* US Army Corps of Engineers, Engineer Research and Development Center Cold Regions Research and Engineering Laboratory. https://wetland-plants.sec.usace.army.mil/nwpl_static/v34/home/home.html/.

USDA (U.S. Department of Agriculture). 2020. Natural Resources Conservation Service. *Hydric Soils List of California*. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

USDA. 2023. Natural Resources Conservation Service. *Custom Soil Resources Report for San Bernardino National Forest Area, California*. https://websoilsurvey.sc.egov.usda.gov/.

USFWS (US Fish and Wildlife Service). 2023. *National Wetlands Inventory Mapper*. http://www.fws.gov/wetlands/Data/Mapper.html.

USGS (US Geological Survey). 2023. 7.5-Minute Topographic Quadrangles, *Silverwood Lake, Lake Arrowhead, San Bernardino, Harrison Mountain, California.*

USGS. n.d. National Hydrography Dataset and Wetland Boundary Dataset. https://viewer.nationalmap.gov/advanced-viewer/.

Western Regional Climate Center. 2023. *Period of Record Monthly Climate Summary for Lake Arrowhead, California (044671)*. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4671.

Michael Baker
INTERNATIONAL

Appendix A: Documentation

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Bernardino National Forest Area, California

November 16, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

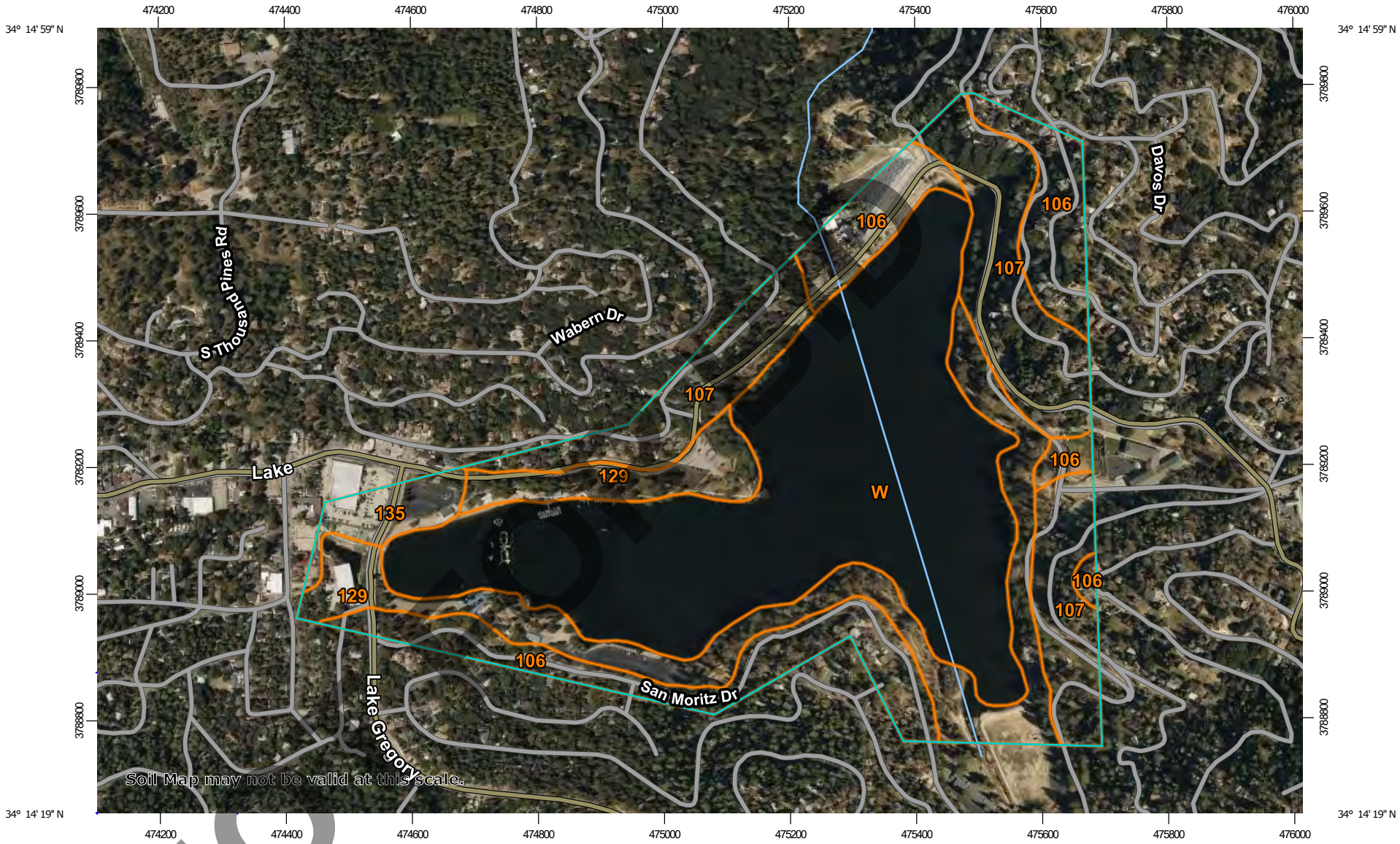
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:8,750 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino National Forest Area, California
Survey Area Data: Version 15, Aug 30, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Lake Gregory Regional Park Sitewide Sediment Management Project)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
106	Cedarpines-Stargazer-Urban land complex, 15 to 30 percent slopes	30.2	16.7%
107	Cedarpines-Stargazer-Urban land complex, 30 to 50 percent slopes	35.8	19.8%
129	Grunney-Shayroad complex, 4 to 9 percent slopes	32.7	18.1%
135	Urban land	4.6	2.6%
W	Water areas	77.3	42.8%
Totals for Area of Interest		**180.5**	**100.0%**

Map Unit Descriptions (Lake Gregory Regional Park Sitewide Sediment Management Project)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the

scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino National Forest Area, California

106—Cedarpines-Stargazer-Urban land complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2dvlx
Elevation: 4,330 to 6,460 feet
Mean annual precipitation: 26 to 41 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cedarpines and similar soils: 45 percent
Stargazer and similar soils: 25 percent
Urban land: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cedarpines

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from granitoid

Typical profile

A - 0 to 5 inches: cobbly sandy loam
Bw - 5 to 20 inches: cobbly sandy loam
C - 20 to 24 inches: extremely cobbly sand
Cr - 24 to 39 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 24 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F019XG914CA - Loamy Hills >30"ppt
Hydric soil rating: No

Description of Stargazer

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from granitoid

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
A - 3 to 16 inches: sandy loam
Bt1 - 16 to 28 inches: clay loam
Bt2 - 28 to 51 inches: loam
Cr - 51 to 61 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 39 to 69 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F019XG914CA - Loamy Hills >30"ppt
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Ecological site: F019XG913CA - Loamy Hills <30"ppt

Minor Components

Heapspeak

Percent of map unit: 5 percent
Landform: Ridges

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canyonspring

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Runningsprings

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

107—Cedarpines-Stargazer-Urban land complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2dvly
Elevation: 4,350 to 6,980 feet
Mean annual precipitation: 26 to 41 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cedarpines and similar soils: 45 percent
Stargazer and similar soils: 25 percent
Urban land: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cedarpines

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from granitoid

Typical profile

A - 0 to 5 inches: cobbly sandy loam
Bw - 5 to 20 inches: cobbly sandy loam
C - 20 to 24 inches: extremely cobbly sand
Cr - 24 to 39 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: 24 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F019XG914CA - Loamy Hills >30"ppt
Hydric soil rating: No

Description of Stargazer

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from granitoid

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
A - 3 to 16 inches: sandy loam
Bt1 - 16 to 28 inches: clay loam
Bt2 - 28 to 51 inches: loam
Cr - 51 to 61 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 39 to 69 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F019XG914CA - Loamy Hills >30"ppt
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Ecological site: F019XG913CA - Loamy Hills <30"ppt

Minor Components

Heapspeak

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canyonspring

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Runningsprings

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

129—Grunney-Shayroad complex, 4 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2dvmm
Elevation: 4,380 to 7,040 feet
Mean annual precipitation: 26 to 41 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Grunney and similar soils: 50 percent
Shayroad and similar soils: 45 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grunney

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

Oa - 0 to 5 inches: muck
A - 5 to 15 inches: mucky loam
Cg - 15 to 59 inches: stratified loamy sand to sandy loam to silt loam

Properties and qualities

Slope: 4 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 20 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D

Ecological site: R019XG907CA - Loamy Bottom
Hydric soil rating: Yes

Description of Shayroad

Setting
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile
A1 - 0 to 4 inches: sandy loam
A2 - 4 to 35 inches: sandy loam
Bw - 35 to 39 inches: sandy loam
C - 39 to 59 inches: sandy loam

Properties and qualities
Slope: 4 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R019XG911CA - Loamy Fan
Hydric soil rating: No

Minor Components

Aquents
Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

135—Urban land

Map Unit Setting
National map unit symbol: 2dvmt

Elevation: 4,400 to 6,870 feet
Mean annual precipitation: 21 to 42 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Ecological site: R019XG911CA - Loamy Fan

Minor Components

Xerorthents
Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

W—Water areas

Map Unit Composition
Water: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Soil Data Access (SDA) Hydric Soils List

An SDA-populated select list is used to pick a state and SSA which enables creation of a "Hydric Soils Report" based upon those selections. The data is not static; it hits Soil Data Access Live. To reset the table hit F5 on the keyboard. Once a survey is selected and table appears, if a new survey is selected it will append to the table at the bottom. For more information about the table,

California

selected stateId = CA

San Bernardino National Forest Area, California

selected SSA areasymbol = CA777

State_Sym	Area_Symbol	Area_Name	mukey	Mapunit_SYM	Mapunit_Name	Comp_Name_phase	muacres	Comp_RV_Pct	majcompflag	Comp_Acres	Comp_Landform	microfeatu
CA	CA777	San Bernardino National Forest Area, California	1380271	119	Cajon-Wasco, cool complex, 2 to 9 percent slopes*	Riverwash	4	1	No	0.0	channels	null
CA	CA777	San Bernardino National Forest Area, California	2230128	129	Grunney-Shayroad complex, 4 to 9 percent slopes	Grunney	482	50	Yes	241.0	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230128	129	Grunney-Shayroad complex, 4 to 9 percent slopes	Aquents	482	5	No	24.1	drainageways	null
CA	CA777	San Bernardino National Forest Area, California	2230131	132	Aquents-Grunney complex, 0 to 4 percent slopes	Aquents	1424	50	Yes	712.0	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230131	132	Aquents-Grunney complex, 0 to 4 percent slopes	Grunney	1424	40	Yes	569.6	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230141	305	Moonridge-Shayroad-Cariboucreek complex, 0 to 4 percent slopes	Grunney	1890	2	No	37.8	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230142	306	Moonridge-Cariboucreek-Urban land complex, 0 to 4 percent slopes	Grunney	1439	3	No	43.2	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230142	306	Moonridge-Cariboucreek-Urban land complex, 0 to 4 percent slopes	Aquents	1439	2	No	28.8	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230143	307	Doble-Shayroad complex, 4 to 9 percent slopes	Grunney	454	3	No	13.6	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230161	405	Grunney mucky loam, 0 to 4 percent slopes	Grunney, mucky loam	110	85	Yes	93.5	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230161	405	Grunney mucky loam, 0 to 4 percent slopes	Aquents	110	5	No	5.5	drainageways	null
CA	CA777	San Bernardino National Forest Area, California	2230162	407	Doble-Shayroad-Urban land complex, 4 to 9 percent slopes	Grunney	269	3	No	8.1	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	2230166	413	Aquents-Riverwash complex, 0 to 4 percent slopes	Aquents	165	60	Yes	99.0	drainageways	null
CA	CA777	San Bernardino National	1380272	628	Haploxerolls-Riverwash association, 2 to	Riverwash	25	20	Yes	5.0	washes	null

		Forest Area, California			25 percent slopes							
CA	CA777	San Bernardino National Forest Area, California	471609	AeD	Oak Glen family-Riverwash association, 2 to 30 percent slopes	Riverwash	940	15	Yes	141.0	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	471616	CaD	Cagey family-Riverwash association, 2 to 15 percent slopes	Riverwash	2120	15	Yes	318.0	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	471639	EsD	Riverwash-Soboba families association, 2 to 15 percent slopes	Riverwash	4505	50	Yes	2252.5	alluvial flats	null
CA	CA777	San Bernardino National Forest Area, California	848229	MrE	Mottsville cobbly loamy sand, 8 to 25 percent slopes	Riverwash	5	5	No	0.3	channels	null
CA	CA777	San Bernardino National Forest Area, California	848230	MsC	Mottsville sandy loam, 2 to 8 percent slopes	Riverwash	428	5	No	21.4	channels	null
CA	CA777	San Bernardino National Forest Area, California	848231	MsD	Mottsville sandy loam, 8 to 15 percent slopes	Riverwash	137	5	No	6.9	channels	null
CA	CA777	San Bernardino National Forest Area, California	848232	MtE2	Mottsville cobbly sandy loam, 8 to 25 percent slopes, eroded	Riverwash	41	5	No	2.1	channels	null
CA	CA777	San Bernardino National Forest Area, California	471668	Rw	Riverwash	Riverwash	3805	80	Yes	3044.0	flood plains	null
CA	CA777	San Bernardino National Forest Area, California	1380276	SsD	Soboba stony loamy sand, 2 to 15 percent slopes	Riverwash	2	10	No	0.2	channels	null

Report Metadata: Back to top

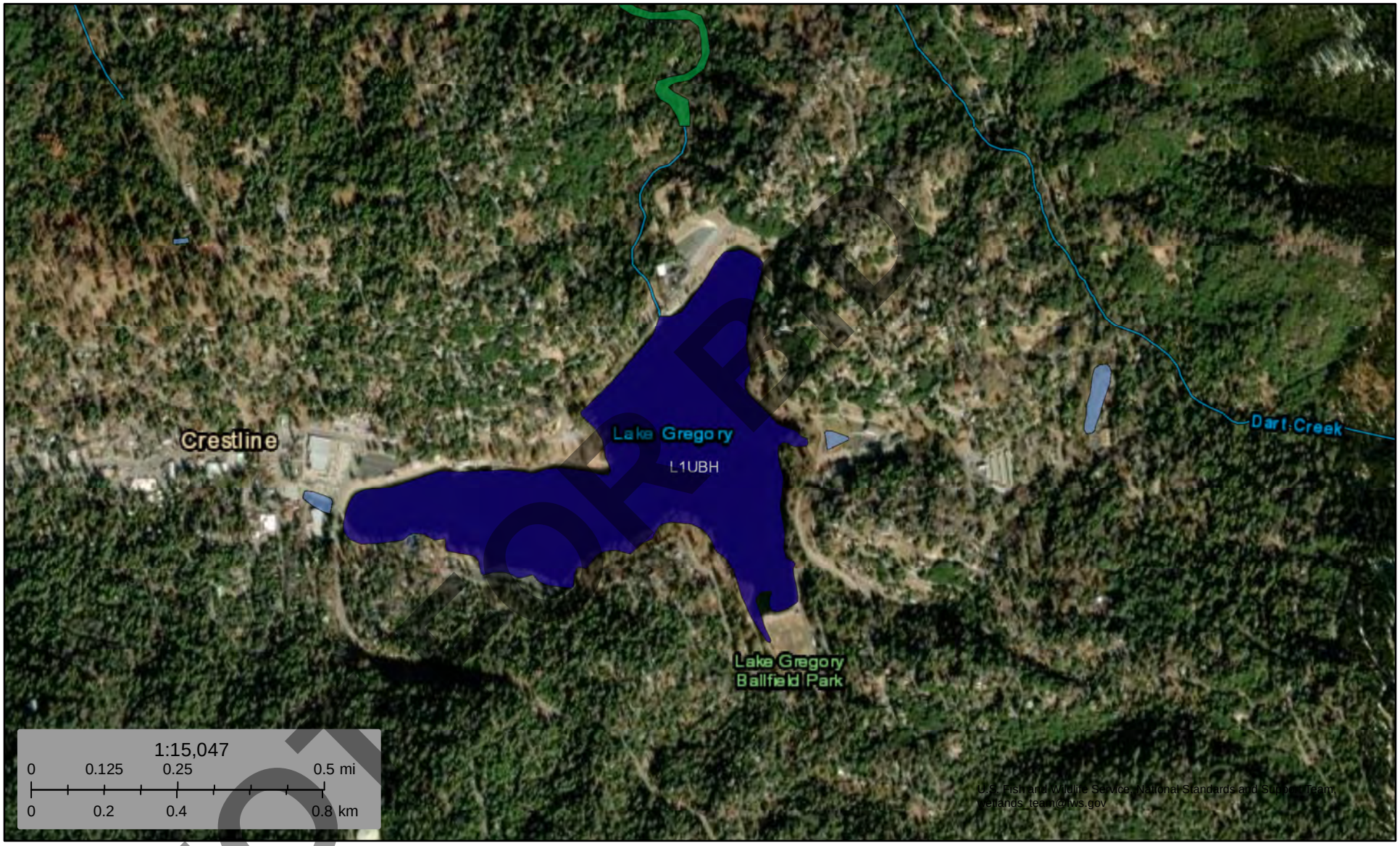
- **Area_Symbol:** A symbol that uniquely identifies a single occurrence of a particular type of area (e.g. Dane Co., Wisconsin is WI025).
- **Area_Name:** The name given to the specified geographic area.
- **mukey:** A non-connotative string of characters used to uniquely identify a record in the Mapunit table.
- **Mapunit_SYM:** The symbol used to uniquely identify the soil mapunit in the soil survey.
- **Mapunit_Name:** Correlated name of the mapunit (recommended name or field name for surveys in progress).
- **Comp_Name_phase:** Component name - Name assigned to a component based on its range of properties. Local Phase - Phase criterion to be used at a local level, in conjunction with "component name" to help identify a soil component.
- **muacres:** The number of acres of a particular mapunit.
- **Comp_RV_Pct:** The percentage of the component of the mapunit.
- **majcompflag:** Indicates whether or not a component is a major component in the mapunit.
- **Comp_Acres:** The number of acres of a particular component in a mapunit. ((muacres*comppct_r)/100)
- **Comp_Landform:** A word or group of words used to name a feature on the earth's surface, expressed in the plural form. Column Physical
- **Hydric_Rating:** A yes/no field that indicates whether or not a map unit component is classified as a "hydric soil". If rated as hydric, the specific criteria met are listed in the Component Hydric Criteria table.
- **Hydric_criteria:** Criterion code for the soil characteristic(s) and/or feature(s) that cause the map unit component to be classified as a "hydric soil." These codes are the paragraph numbers in the hydric soil criteria publication.

Criteria:

1. All Histels except Folistels and Histosols except Folists; or
2. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;
3. Map unit components that are frequently ponded for long duration or very long duration during the growing season that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil; or
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soils meet the definition of a hydric soil.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Lake Gregory Regional Park Sitewide Sedi



November 16, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Flood Hazard Layer FIRMette

FEMA

117°16'37"W 34°14'48"N

117°15'59"W 34°14'18"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2023 at 2:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

117°16'22"W 34°14'52"N

117°15'44"W 34°14'22"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2023 at 2:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

USGS TNM – National Hydrography Dataset. Data Refreshed November, 2023., USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

Michael Baker
INTERNATIONAL

Appendix B:
Site Photographs

Photograph 1: View facing northwest of south beach from the southern shore of Lake Gregory..

Photograph 2: View facing north depicting typical conditions within San Moritz Channel/Sediment Basin from within the channel, with Lake Gregory in the background.

Photograph 3: View facing north towards south basin from the south shore with Lake Gregory in the background.

Photograph 4: View facing west depicting the wetland habitat located at Inlet 11 along the eastern shore of Lake Gregory.

Photograph 5: View facing northwest towards Inlet-13 depicting typical conditions observed at inlets throughout the site.

Photograph 6: View facing north depicting typical conditions within the spillway of Lake Gregory and the headwaters of Houston Creek.

Photograph 7: View facing northeast depicting AF-2a from the south where it is tributary to AF-2..

Photograph 8: View facing north depicting typical conditions within AF-2 in the western portion of the project site.

Michael Baker
INTERNATIONAL

Appendix C:
Wetland Data Forms

Michael Baker
INTERNATIONAL

Appendix C: Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lake Gregory Regional Park SSMP City/County: Crestline/San Bernardino Sampling Date: 10/12/23

Applicant/Owner: County of San Bernardino State: Ca Sampling Point: SP1

Investigator(s): John Parent and Stephen Andersen Section, Township, Range:

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): Arid West Lat: 34.243909 Long: -117.265202 Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rhombifolia	80	Y	FACW
2. Salix nigra	20	Y	OBL
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Salix laevigata	100	Y	FACW
2.			
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus acutus	40	Y	FACW
2. Urtica dioica	20	Y	FAC
3. Artemisia douglasiana	30	Y	FAC
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 3/1	100					loamy san	
1 - 8	10YR 4/3	100					sand	coarse grained sand
8 - 12	10YR 2/2	100					loamy san	coarse loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ✔ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Surface water

Depth (inches): 12

Hydric Soil Present? Yes ✔ No ☐

Remarks:

Water table at 6 inches. Below water table soil was colored to 10YR 2/1

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ✔ Saturation (A3)
- ✔ Water Marks (B1) (**Nonriverine**)
- ✔ Sediment Deposits (B2) (**Nonriverine**)
- ✔ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ✔ Depth (inches): _____

Water Table Present? Yes ✔ No ☐ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes ✔ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Near outlet of culvert. Obvious signs of hydrology

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lake Gregory Regional Park SSMP City/County: Crestline/San Bernardino Sampling Date: 10/12/23

Applicant/Owner: County of San Bernardino State: Ca Sampling Point: SP2

Investigator(s): John Parent and Stephen Andersen Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 5

Subregion (LRR): Arid West Lat: 34.243666 Long: -117.265386 Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No	**Is the Sampled Area within a Wetland?** Yes No ✔
Hydric Soil Present?	Yes	No ✔	
Wetland Hydrology Present?	Yes	No ✔	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	90	Y	FACU
2. Alnus rhombifolia	10	N	FACW
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Salix lasiolepis	100	Y	FACW
2.			
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size:)			
1. Hordeum sp.	80		FACU
2. Urtica dioica	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No

Remarks:

SOIL

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2							duff	
2 - 22	10YR 5/4	100					sand	won't form ribbon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Water table at 6 inches. Below water table soil was colored to 10YR 2/1

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: