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September 2025
Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project

ANCHOR QEA

Initial Study/Mitigated Negative Declaration

Prepared for Glenn-Colusa Irrigation District

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Prepared for
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ABBREVIATIONS

µg/m^3	microgram per cubic meter
AB	Assembly Bill
AB 32	California Global Warming Solutions Act of 2006
APCD	air pollution control district
AQMD	air quality management district
ARB	California Air Resources Board
BCAQMD	Butte County Air Quality Management District
BIOS	Biogeographic Information and Observation System
BLM	Bureau of Land Management
BRCP	*Butte Regional Conservation Plan*
Btu	British thermal unit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL/OSHA	California Division of Occupational Safety and Health
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDMG	California Department of Mines and Geology
CDWR	California Department of Water Resources
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCP	California Farmland Conservancy Program
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
cfs	cubic foot per second
CGS	California Geological Survey
CH_4	methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide

CO_2e	CO_2 equivalence
Cortese List	Hazardous Waste and Substances Sites List
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Rank
CRWQCB	California Regional Water Quality Control Board
CSLC	California State Lands Commission
CWA	Clean Water Act
cy	cubic yard
dB	decibel
dBA	A-weighted decibel
DBH	diameter at breast height
Delta	Sacramento-San Joaquin River Delta
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DPS	distinct population segment
DTSC	Department of Toxic Substances Control
EFH	Essential Fish Habitat
EIR	environmental impact report
EO	Executive Order
ESA	Environmentally Sensitive Area
ESU	evolutionarily significant unit
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
Fish Screen Project	Hamilton City Fish Screen Improvement Project
FMMP	Farmland Mapping and Monitoring Program
FMP	fishery management plan
FRA	Federal Responsibility Area
g/cm^3	gram per cubic centimeter
GCID	Glenn-Colusa Irrigation District
GF	Gradient Facility
GHG	greenhouse gas
GCAPCD	Glenn County Air Pollution Control District
GLO	General Land Office
GSA	Groundwater Sustainability Agency
GSP	groundwater sustainability plan
GWh	gigawatt hours

GWP	global warming potential
H:V	horizontal to vertical
HCPP	Hamilton City Pumping Plant
HDPE	high-density polyethylene
HMMP	Hazardous Materials Management Plan
HSC	California Health and Safety Code
IPCC	Intergovernmental Panel on Climate Change
IS/MND	Initial Study/Mitigated Negative Declaration
lb/day	pound per day
LOS	Level of Service
LRA	Local Responsibility Area
m	meter
MBTA	Migratory Bird Treaty Act
MRZ	mineral resource zone
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MT	metric ton
N/A	not applicable
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NVSPA	Northern Sacramento Valley Planning Area
O&M	operations and maintenance
O_3	ozone
Off-Road Diesel Regulation	Regulation for In-Use Off-Road Diesel-Fueled Fleets
OHWM	ordinary high water mark
OPR	Governor's Office of Planning and Research
OPR Technical Advisory	*Technical Advisory on Evaluating Transportation Impacts in CEQA*
OSHA	Occupational Safety and Health Administration
PBF	physical or biological features
PG&E	Pacific Gas and Electric

PM_{10}	particulate matter 10 microns or smaller in diameter
$PM_{2.5}$	particulate matter 2.5 microns or smaller in diameter
ppm	part per million
PPV	peak particle velocity
PRC	Public Resources Code
proposed project	Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project
RCRA	Resource Conservation and Recovery Act
RM	river mile
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SDPS	southern distinct population segment
sf	square foot
SGMA	Sustainable Groundwater Management Act
SIP	state implementation plan
SMARA	California Surface Mining and Reclamation Act
SMP	soil management plan
SO_2	sulfur dioxide
SR	State Route
SRA	State Responsibility Area
SVAB	Sacramento Valley Air Basin
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCAPCD	Tehama County Air Pollution Control District
Tehama County FCWCD	Tehama County Flood Control and Water Conservation District
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VELB	Valley elderberry longhorn beetle
VMT	vehicle miles traveled

1 Introduction

1.1 California Environmental Quality Act Process

This Initial Study/Mitigated Negative Declaration (IS/MND) was prepared by the Glenn-Colusa Irrigation District (GCID) to identify the potential environmental impacts of the Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project (proposed project) under the California Environmental Quality Act (CEQA; Public Resources Code [PRC] 21000 et seq.) and the CEQA Guidelines (California Code of Regulations [CCR] 15000 et seq.). The proposed project is intended to address ongoing Sacramento River bank erosion and the existing scour hole, which are threatening the continuing functionality of the gradient facility (GF) and GCID's intake channel fish screen. The proposed project is needed for the continued proper function of the GCID Hamilton City Pumping Plant (HCPP) Fish Screen Improvement Project (Fish Screen Project).

CEQA, enacted by the California legislature in 1970, requires public agency decision-makers to consider the environmental effects of their actions. One of the main objectives of CEQA is to disclose the potential environmental effects of proposed activities to the public and decision-makers. CEQA requires that the potential environmental effects of a project be evaluated prior to implementation. This IS/MND includes a discussion of the proposed project's impacts to the existing environment, including the identification of avoidance, minimization, and mitigation measures.

GCID has directed the preparation of an environmental document that complies with CEQA and will consider the information in this document when determining whether to approve the proposed project. The preparation of initial studies is guided by Section 15063 of the CEQA Guidelines, whereas Sections 15070 through 15075 guide the process for the preparation of a Negative or Mitigated Negative Declaration. Where appropriate and supportive to an understanding of the issues, reference will be made to the statute, the CEQA Guidelines, or appropriate case law.

This IS/MND meets CEQA content requirements by including a project description; descriptions of the environmental setting, potential environmental impacts, and mitigation measures for any potentially significant impacts; and discussion of the proposed project's consistency with plans and policies.

1.2 Lead, Responsible, and Trustee Agencies

The CEQA Guidelines identify "the lead agency as the public agency which has the principal responsibility for carrying out or approving a project" (14 CCR 15367). GCID is the CEQA lead agency for the proposed project and has the primary responsibility for carrying out the proposed project.

Projects or actions undertaken may also require subsequent oversight, approvals, or permits from other public agencies. Other such agencies are referred to as responsible agencies and trustee

agencies. Pursuant to CEQA Guidelines Sections 15381 and 15386, as amended, responsible and trustee agencies are defined as follows:

1. A **responsible agency** is "a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term 'Responsible Agency' includes all public agencies other than the Lead Agency which have discretionary approval authority over the project" (CEQA Guidelines Section 15381).
2. A **trustee agency** is "a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California" (CEQA Guidelines Section 15386). Trustee agencies have jurisdiction over natural resources held in trust for the people of California but do not have legal authority over approving or carrying out a project.

Table 1 summarizes the expected relevant regulatory agencies, their expected jurisdiction (i.e., trustee or responsible agency), and their statutory authority as related to the proposed project. The jurisdiction of these agencies will be confirmed through subsequent coordination.

Table 1
Regulatory Agencies and Authority

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
CDFW	Trustee agency, Responsible agency	• CDFW reviews and submits recommendations in accordance with CEQA. • CDFW reviews and authorizes in-water work and work in riparian areas under the California Fish and Game Code • The proposed project will require a Streambed Alteration Agreement from CDFW.
California State Lands Commission (CSLC)	Trustee agency, Responsible agency	• CSLC reviews and approves projects on sovereign lands under its jurisdiction and requires lease authorization for use of State-owned riverbeds and banks. • The proposed project will require modification of its General Lease – Public Agency Use from CSLC.
Central Valley Regional Water Quality Control Board (CVRWQCB)	Responsible agency	• CVRWQCB reviews projects for authorization under the Porter-Cologne Water Quality Control Act and Clean Water Act (CWA) Sections 401 (Water Quality Certification) and 402 (National Pollutant Discharge Elimination System [NPDES]). • The proposed project is expected to require a NPDES permit to regulate construction-related stormwater at the project site and will require a CWA 401 Water Quality Certification.

Regulatory Agency	Jurisdiction	Statutory Authority/Implementing Regulations
U.S. Army Corps of Engineers (USACE), Sacramento District	Federal agency	• USACE reviews and authorizes projects that involve work in navigable waters or the discharge of dredge or fill material into waters of the U.S. • The proposed project will require a CWA Section 404/Rivers and Harbors Act Section 10 Individual Permit due to the placement of fill material in waters of the U.S. and work in navigable waters.
Tehama County	Responsible agency	• Each county reviews and approves projects through issuance of local land use permits and approvals.
Glenn County		
Butte County		

1.3 Public Participation, Consultation, and Coordination

Public participation is an integral part of the CEQA process. Public participation facilitates two-way communication between the public and the lead agency (GCID) decision-makers, ensuring that public concerns and input are considered in the final decision. GCID's public participation process ensures that interested persons are informed about discretionary decisions and have the opportunity to provide input. GCID also consults with public agencies in a variety of ways when developing CEQA documents, including direct agency outreach and distribution of documents. This draft IS/MND will be posted on the GCID CEQA website at https://www.gcid.net/.

1.3.1 Regulatory Guidance Related to Public Outreach and Coordination

1.3.1.1 Assembly Bill 52

Assembly Bill (AB) 52 became effective on July 1, 2015, requiring lead agencies to consider the effects of projects on Tribal cultural resources and to conduct notification and consultation, as requested, with federally and non-federally recognized Native American Tribes and the Native American Heritage Commission (NAHC) early in the environmental review process. One Native American Tribe, the Colusa Tribe – Cachil Dehe Band of Wintun Indians, has requested to be notified of CEQA documents prepared by GCID. GCID notified the Colusa Tribe – Cachil Dehe Band of Wintun Indians on June 17, 2025 (Anchor QEA 2025a). GCID received a request for additional details from the Colusa Tribe – Cachil Dehe Band of Wintun Indians on July 9, 2025 (Colusa Tribe 2025). Anchor QEA, on behalf of GCID, responded to the request for additional information on July 9, 2025 (Anchor QEA 2025b). No further correspondence has been received.

1.4 Incorporation by Reference

As permitted in Section 15150 of the CEQA Guidelines, CEQA lead agencies may reference all or portions of another document that is a matter of public record or is generally available to the public. Information from documents that have been incorporated by reference is briefly summarized in the

appropriate sections of this IS/MND, along with a description of how the public may obtain and review these documents. The documents that are incorporated by reference in this IS/MND are summarized in Sections 1.4.1 through 1.4.3. Documents that are incorporated by reference are available for review at the Internet links provided in the following sections.

1.4.1 Butte County General Plan 2040

The *Butte County General Plan 2040* (Butte County 2023a), which is available online at https://www.buttecounty.net/367/Butte-County-General-Plan-2040, is appropriate to incorporate by reference because it establishes the land use designation for the portion of the project site in Butte County with which the proposed project is consistent. The 2040 General Plan identifies the area of the project site that is within Butte County as Agriculture (AG). The 2040 General Plan also sets regional noise standards based on land use designations.

1.4.2 Glenn County General Plan

The *Glenn County General Plan* (Glenn County 2023), which is available online at https://static1.squarespace.com/static/5c8a73469b7d1510bee16785/t/6501ddc090fa5b221162db04/1694621148151/GlennCounty_General+Plan+Adopted+7-18-23.pdf, is appropriate to incorporate by reference because it establishes the land use designation for the portion of the project site in Glenn County with which the proposed project is consistent. The *Glenn County General Plan* identifies the area of the project site that is within Glenn County as Intensive Agriculture and also sets regional noise standards based on land use designations.

1.4.3 Tehama County General Plan

The *Tehama County General Plan* (Tehama County 2009), which is available online at https://tehamartpa.org/wp-content/uploads/2020/06/2009-2029-Tehama-County-General-Plan-r1.pdf, is appropriate to incorporate by reference because it establishes the land use designation for the portion of the project site in Tehama County with which the proposed project is consistent. It also identifies the area of the project site that is within Tehama County as Valley Floor Ag/Capay and sets regional noise standards based on land use designations.

2 Project Description

GCID is proposing this project to repair and protect the existing GF and stabilize riverbank areas along the east and west banks of the Sacramento River in an effort to restore the river alignment between river miles (RMs) 205 and 206. The GF is located approximately 4 miles north of Hamilton City, California, just downstream of GCID's intake channel and adjacent to Montgomery Island.

The proposed project includes two construction phases, as well as future operations and maintenance. Phase 1 would begin in late summer/fall 2026 and consist of the following:

- Constructing spur dikes on the east and west banks of the river
- Installing a riprap pad on the east overbank
- Installing rock slope protection near the intake bypass return channel on the west bank
- Possible mechanical removal of gravel from the mid-channel bar in the middle of the river

Phase 2 would be completed between 5 and 15 years after Phase 1 and would potentially consist of the following:

- Constructing additional spur dikes on the east and west banks
- Installing additional rock protection riprap pads and a rock protection berm in the east overbank area
- Partially filling the scour hole
- Installing rock protection on the west bank near the scour hole
- Possible mechanical removal of gravel from the mid-channel bar in the middle of the river

It is possible that not all Phase 2 elements will be determined to be necessary, but for planning purposes, all are covered in this IS/MND. Specific Phase 2 project elements are further described in this section.

2.1 Project Location and Environmental Setting

CEQA Guidelines Section 15063(d)(1) requires that an Initial Study identify the environmental setting as a basis for evaluating environmental impacts. Additional detail on the environmental setting as it relates to individual resource topics is presented in Section 3.

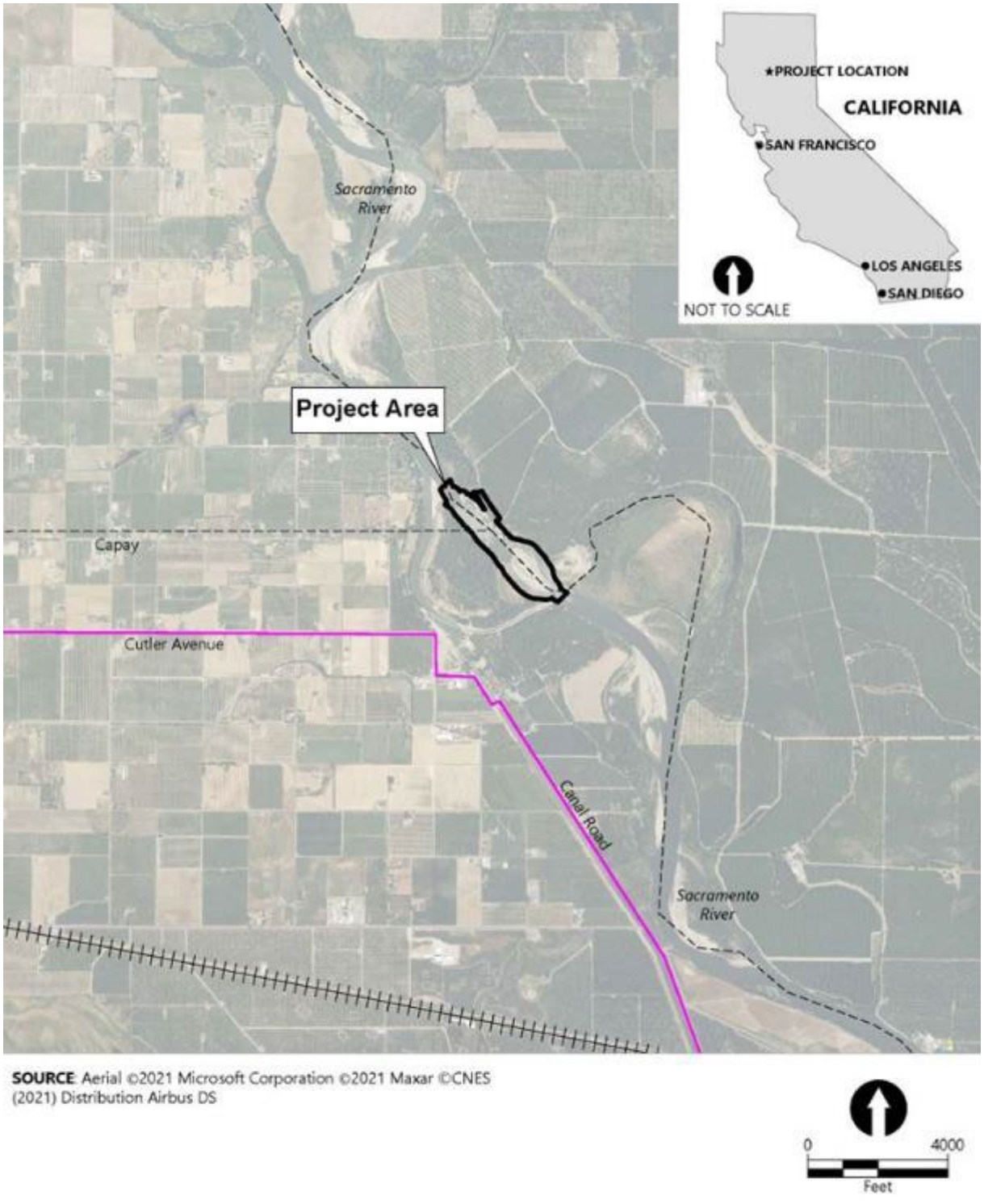
2.1.1 Regional Setting

The GF is located approximately 170 miles northeast of San Francisco and approximately 115 miles northwest of Sacramento. The GF is on the Sacramento River, the largest river in California, originating in the Klamath Mountains and flowing south approximately 400 miles until it reaches the Sacramento–San Joaquin River Delta (Delta) and San Francisco Bay. GCID is the largest irrigation district in the Sacramento Valley, with one diversion from the Sacramento River at its HCPP, approximately 4 miles north of Hamilton City and immediately west of the project site.

2.1.2 Project Site Setting

The project area is an approximately 1-mile stretch of the Sacramento River from just north of Montgomery Island to just downstream of the return flow channel from GCID's fish screen and main pumping station (Photograph 1). The project area is within the boundaries of Butte, Tehama, and Glenn counties in a rural area, with agricultural fields on both sides of the river. The lands within the project area are largely undeveloped, and the vegetation along the banks is subject to natural river forces that erode the alluvial banks and scour vegetation annually (Photographs 2 through 7). Rock protection currently exists on the banks of the river, as depicted in Photographs 8 to 10. The project site is designated for variations of agricultural use by the relevant county general plans (Butte County: Agriculture; Glenn County: Intensive Agriculture; and Tehama County: Valley Floor Ag/Capay). The riverbank to the east of the GF is privately owned by Deseret Farms and operated as a walnut orchard.

Figure 1
Site and Vicinity Map



Photograph 1
Overall Project Site Looking Southeast and Downstream From GF

Anchor QEA, February 14, 2022

Photograph 2
Fish Screen—Return Channel Outlet to the Sacramento River to the Left

Anchor QEA, February 14, 2022

Photograph 3
Erosion of the West Bank (Montgomery Island) Looking South—GCID Return Channel Appears in the Upper Left Corner

Anchor QEA, April 30, 2021

Photograph 4
West Bank (Montgomery Island) Vegetation Scour Looking South—GCID Return Channel Appears in the Upper Left Corner

Anchor QEA, April 30, 2021

Photograph 5
West Bank Erosion (Montgomery Island) Looking Southwest—GCID Return Channel to the Upper Left but Out of View

Anchor QEA, February 14, 2022

Photograph 6
East Bank Erosion Looking Southeast—Deseret Farms' Lands in the Background

Anchor QEA, February 14, 2022

Photograph 7
East Bank Erosion Adjacent to Deseret Farms' Walnut Orchard Looking North

Anchor QEA, April 30, 2021

Photograph 8
East Bank Existing Rock Embankments Looking East—Deseret Farms' Lands in the Background

Anchor QEA, February 14, 2022

Photograph 9
East Bank Existing Rock Embankments Looking East—Deseret Farms' Lands in the Background

Anchor QEA, February 14, 2022

Photograph 10
West Bank Existing Rock Embankments (Montgomery Island) Looking Northwest—GCID Intake Channel to the Upper Right but Out of View

Anchor QEA, February 14, 2022

2.2 Project Background

GCID is an irrigation district formed in 1920 to provide irrigation water to farms in Glenn and Colusa counties. It supplies water to landowners and water users and manages supply. GCID consists of approximately 175,000 acres of land within the Sacramento Valley and has perfected water rights under California law, with a date of priority before 1900. GCID diverts water from the Sacramento River at its HCPP where it is then conveyed through GCID's 65-mile-long Main Canal into a complex system of nearly 1,000 miles of canals and laterals before delivery to more than 1,000 individual landowners. GCID owns Montgomery Island and has an existing lease with the California State Lands Commission (CSLC) for operations and maintenance (O&M) of the GF in this area. The riverbank to the east of the GF is privately owned by Deseret Farms. The Sacramento River is both a water of the United States and the State of California.

In 1993, as a result of litigation under the federal Endangered Species Act (FESA), GCID joined with federal and state agencies to develop a long-term solution to address the protection of fishery resources and to ensure a reliable water supply for GCID. The long-term solution that was developed was the Fish Screen Project, which consisted of a fish screen extension, a gravity bypass channel, and the GF. The fish screen extension consists of an approximately 600-foot extension of the previously existing 475-foot fish screen on a side channel of the river. The fish screen extension increased the diversion intake screen area to reduce through-flow water velocities. The converging bypass channel design along with the GF maintain sufficient sweeping water velocities throughout the length of the fish screen to minimize exposure time to the screen. The GF consists of a 1,000-foot in-channel permanent rock structure and 2,500 feet of embankment located approximately 1/4 mile downstream from GCID's intake channel diversion off the Sacramento River east of Montgomery Island near RM 206. The Fish Screen Project was completed in 2000.

In a 2009 report, an expert panel raised concerns regarding the underlying hydraulic analysis used in the design of the GF and identified other issues potentially affecting its stability. The expert panel identified two extensive scour depressions, the first of which is located on the east overbank alongside of the GF (Photograph 11). The expert panel raised the concern that continued scouring in this location would undermine the sheet pile walls used to secure the GF. The second scour depression developed directly downstream of the GF; at the time of the panel report, this scour hole was 14 feet deep. The scour hole increased in depth to at least 26 feet since the report was prepared. The panel concluded that the bed scour had exceeded the design intent, even though Sacramento River flows since construction have not exceeded 50% of the 100-year design discharge.

Photograph 11
Scour Depression—Along Main River Channel on the Left Side of Photograph

Anchor QEA, February 14, 2022

In addition to the two areas of scour resulting from the GF, a mid-channel gravel bar formed downstream of the GF and grew extensively over time. The rate of growth has been estimated at 15,000 cubic yards (cy) per year. The bar growth has caused extensive bank erosion on the adjacent east and west banks downstream of the GF, which is threatening to erode into the fish bypass channel. As an interim measure to reduce bank erosion, the mid-channel bar was excavated to 1 foot above the water line elevation in the summer of 2022. A total of approximately 207,000 cy of gravel and sediment were excavated. With the protracted high flows that occurred during the winter of 2023 to 2024, bank erosion on the east and west banks is still an ongoing issue requiring urgent response despite the interim excavation efforts on the mid-channel bar.

The proposed project is considered by GCID to be maintenance and rehabilitation of adjacent riverbank and channel structures that are integral to the GF and necessary for proper function of the Fish Screen Project.

2.3 Project Objectives

The purpose of the proposed project is to iteratively address ongoing bank erosion and the existing scour hole, which are threatening the continuing functionality of the GF to maintain proper fish passage protection conditions at GCID's intake channel fish screen. As the Sacramento River has

flowed around the growing mid-channel bar over the past 20 years, the east and west banks of the river have experienced extensive erosion, as is evident in Figure 2 and Photographs 1 through 10.

Figure 2
Mid-Channel Bar Growth and Corresponding Bank Loss Over Time

1985 Conditions

2003 Conditions

2021 Conditions

2022 Conditions (after sediment excavation)

The key objectives of the project include the following:

- Restore the geomorphic and hydraulic conditions of the Sacramento River channel at the GCID diversion.
- Preserve the original design objectives and current function of the GF to provide sufficient water surface elevations at GCID's fish screening facility and pumping plant.
- Maintain safe fish passage and boat navigation through the GF.
- Alleviate predator-congregating habitat to ensure juvenile salmon and other special-status species survival between RMs 205 and 206.
- Reduce the potential for Sacramento River avulsion[1] through the east bank area, either through overbank flow adjacent to the GF or flow through an unnamed off-channel drainage that enters the east bank area.
- Stabilize the downstream end of the GF (scour hole area) to prevent failure.
- Reduce the potential for channel migration and bank erosion from downstream of the GF to the confluence of the return flow channel from the pumping plant.
- Minimize construction-related environmental impacts.
- Provide a design that can be constructed within the work windows applicable to this portion of the Sacramento River.
- Provide a cost-effective and constructable project.
- Develop a long-term sustainable O&M plan.
- Maintain the current configuration of the fish return channel to achieve original fish passage protection design conditions.

2.4 Proposed Project Construction

As described previously, the proposed project would consist of two phases, which are further described in the following sections.

2.4.1 Phase 1

Phase 1 would be the first phase undertaken to address immediate threats to the continuing functionality of the GF and would begin in late summer/fall 2026. Phase 1 prioritizes critical project elements that protect the east and west banks from continued bank erosion, protect the fish return channel configuration downstream of the GF, and reduce potential for Sacramento River avulsion through the east bank and overbank areas.

[1] An avulsion is abandonment of the river channel or formation of a new river channel.

Phase 1 includes the following elements:

- Constructing eight spur dikes on the east bank and three spur dikes on the west bank to reduce the potential for channel migration and bank erosion from the GF to the confluence of the intake bypass return channel and the Sacramento River
- Installing rock slope protection downstream of the west bank spur dikes to protect the intake bypass return channel configuration and therefore maintain the original fish passage protection design conditions for fish returning to the Sacramento River mainstem
- Installing a rock protection riprap pad near the downstream sheet pile on the overbank east of the GF to reduce the potential for Sacramento River avulsion through the east overbank area
- If needed, excavation of the mid-channel bar to balance proposed project-related fill quantities with associated cut quantities

Sections 2.4.1.1 through 2.4.1.4 provide more detail on each proposed project element of Phase 1. Specifics on the proposed sequencing of each proposed project element are described in Section 2.5.

2.4.1.1 East and West Bank Spur Dikes Construction

As part of Phase 1, the east and west banks between the GF and the fish return channel would be stabilized with a series of spur dikes. A total of eight and three spur dikes would be installed on the east and west banks, respectively. The purpose of the spur dikes is to direct flow away from the riverbanks and reduce bank erosion caused by the deposition of sediment on the mid-channel gravel bar. The spur dikes would aid in the long-term goal of returning and maintaining the river channel geometry to the original condition that was present when the GF was designed and constructed. Sediment transported in downstream flows would settle between the dikes, creating new substrate for riparian vegetation to establish upon.

A similar solution was implemented in 2005 on the west bank of the Sacramento River just north of the Butte City Bridge approximately 20 miles south of the project area. The purpose of this effort was to restore the dimensions and integrity of the west bank to protect the footings of the bridge immediately to the south. Four approximately 150- to 165-foot-long spur dikes were constructed approximately 150 feet apart in 2005. Figure 3 shows how the spur dikes successfully restored the west bank of the river as sediment filled in between the dikes, supporting the establishment of riparian vegetation over an 18-year time span.

Figure 3
Historic Views of Spur Dike Installation at the Butte City Bridge

2005 Conditions

2007 Conditions

2015 Conditions

2023 Conditions

GCID would construct the spur dikes to extend 60 to 70 feet into the river from the toe of the bank. To ensure the ongoing stability of each spur dike and prevent erosion between the bank and spur dike, a rock key would anchor each spur dike into the bank. Rock keys are composed of the same rock as the spur dike. Material would be excavated from the bank, rock would be placed, and a portion of the excavated material would be placed on top of the rock key if needed to restore the bank elevation to original grade. For spur dikes constructed on the west bank, excess material excavated and not used as backfill would be temporarily stockpiled on Montgomery Island, in the same area as the mid-channel bar excavated material, as depicted in Figure 4. Excavated material not used as backfill from the east bank would be either temporarily stockpiled in a staging area on the

east bank or placed landward of Spur Dike E-8 to prevent continued erosion of this low-lying area and possible separation of the bank and the spur dike.

Figure 4
Gravel Placement on Montgomery Island from Mid-Channel Bar Excavation in 2022

The tops of the spur dikes would be about 10 feet wide, and the spur dikes would be spaced approximately 180 feet apart. The spur dike would be constructed with a flat top; the elevation of the top would vary but would generally be level with the top of bank. The spur dikes would be constructed of 2- to 3-foot-diameter rock sourced from a local quarry placed below and above the ordinary high water mark (OHWM). The rocks would not contain fine-grained material that could wash away when placed into the river. After installation of the spur dikes, GCID would monitor and maintain the spur dikes; additional details are provided in Section 2.7.

Construction of the spur dikes would require temporary access to the east and west banks of the Sacramento River, which would require temporary rock fill below and above OHWM. Spur dike construction could occur from the east and west banks from the bank working waterward or vice versa with land-based or barge-mounted equipment.

Areas between the spur dikes and the bank above the rock slope protection area may be planted after rock placement activities are complete. The surfaces in between the spur dikes would be highly suitable for the recruitment of riparian vegetation and/or the installation of willow and cottonwood cuttings. Natural recruitment of riparian vegetation along the exposed surfaces along the river is a common occurrence. Initially, sediment between the spur dikes on which plants could grow would be lacking until the river flows move sediment between the spur dikes. Riparian restoration would be limited to when substrates accumulate between the spur dikes. The use of native willow and cottonwood cuttings (greensticks), stakes, posts, and/or wattles may be incorporated between the

spur dikes. Greensticks of varying size may be securely embedded in the soil substrate where they can root. Local willow and cottonwood greenstick materials could be collected from the project vicinity and installed between the spurs such that over time sediments are captured, further stabilizing the area. Willow wattles, constructed from multiple greensticks that are tied together forming a linear bundle, may be anchored on the bank or between spur dikes when sediments have accumulated, such that they can survive winter flows and create new bands of growth in desired locations between the spur dikes.

In riparian areas where temporary impacts would occur for access (the east bank sand bar), willows, cottonwoods, and other stump sprouting trees would be cut to the ground level and root systems left intact so they can resprout after project features are installed. After Phase 1 completion, resprouting would rapidly result in revegetation of these areas. Where feasible, this less invasive clearing procedure would enable the fast regrowth in temporary impact zones.

2.4.1.2 West Bank Rock Protection

As part of Phase 1, rock slope protection is proposed on the west bank at the southern extent of Montgomery Island near the fish return channel to prevent an avulsion through that channel. A continuous rock layer with a slope of 2 horizontal to 1 vertical (2H:1V) would be placed against the existing bank below and above OHWM. The rock slope protection would extend approximately 250 feet upstream of the fish return channel to stabilize and protect the west bank against high velocities. Construction could occur from the bank working waterward or vice versa with land-based or barge-mounted equipment. Staging for this project element would occur on Montgomery Island, in the same area as the mid-channel bar excavated material, as depicted in Figure 4.

2.4.1.3 East Bank Rock Protection Riprap Pads

Phase 1 would also include stabilizing the bank area between the GF and the Deseret Farms boundary road to the east to prevent an avulsion or undermining of the existing sheet pile that extend east from the GF (Photograph 11). As depicted in Photograph 12, there are three existing sheet piles across the east sand bar and bank, and a new rock layer is specified for the southernmost sheet pile.

Photograph 12
Existing Sheet Piles on East Bank (two northernmost sheet piles depicted)

Anchor QEA, February 14, 2022

The existing sheet pile currently prevents the scouring of a new channel through the east bank sandbar. A 50-foot-wide and 5-foot-deep layer of rock is proposed to be placed over the sheet pile below and above OHWM and run the entire length (1,700 feet) of the existing sheet pile to the extent of the water's edge to protect the east bank adjacent to the GF. To construct this project element, a 5-foot-deep trench adjacent to the south of the sheet pile would be excavated and backfilled with rock. Removal of riparian vegetation surrounding the rock protection riprap pad would be required prior to placement activities.

If a scour hole develops adjacent to the newly placed rock layer, rocks would slide or roll into the hole, partially filling the hole but still buttressing the sheet pile. The top of the rock layer would be placed at the same level as the top of the sheet pile wall, except where the sheet pile wall is deeply buried. At those locations, the top of the rock layer would be leveled with the existing ground.

2.4.1.4 As-needed Mid-Channel Bar Excavation

The proposed project has been specifically designed to balance its new fill areas below OHWM with corresponding existing fill removal areas below OHWM to achieve a net zero fill balance. The spur dikes would direct flow away from the riverbanks, which in turn would reduce bank erosion (which has historically been caused by the deposition of sediment on the mid-channel bar). Over time, flows

would gradually become more focused to the center of the river channel and would increasingly naturally remove sediment that has amassed on the mid-channel bar. In terms of fill impacts, the new fill below the OHWM from construction activities, including the spur dikes, would be expected to balance out to no net fill when factoring in the associated natural removal of existing mid-channel bar fill through the force of river water over time.

To confirm that the mid-channel bar is eroding as envisioned due to installation of the spur dikes, GCID would conduct annual aerial and topographic surveys of the mid-channel bar. Although such an outcome is not anticipated, if net fill values below OHWM do not equate to net zero within 5 years of construction of Phase 1, to ensure that the proposed project causes no net fill, GCID would excavate sufficient gravel and sediment from the mid-channel bar to balance out any residual volumes of fill below OHWM. If gravel is excavated from the mid-channel bar concurrent with project construction, a 1:1 mitigation ratio would be applied. If mitigation for permanent impacts to open water is delayed either through 1) natural erosion of the mid-channel bar expected to occur as a result of project construction; or 2) excavation of sediment from the above-water portion of the mid-channel bar if natural erosion of the mid-channel bar is insufficient to compensate for fill of waters associated with project construction area, then mitigation will include re-establishment of open water habitat at a 1:1 mitigation ratio for temporary impacts and a 2:1 mitigation ratio for permanent impacts that accounts for temporal loss of waters.

For equipment access to complete excavation activities on the mid-channel bar, the contractor would construct a temporary land bridge across the shallowest, shortest channel of the Sacramento River from the west bank of the Sacramento River on Montgomery Island to the mid-channel bar. The temporary land bridge may be constructed out of super sacks or large rocks and clean rocks, such as gravel or quarry spalls. To block flows from passing through and compromising the integrity of the land bridge, super sacks or large rocks would first be placed along the upstream and downstream sides of the land bridge, with a distance of 30 to 50 feet between the two rows of sacks or rocks. Numerous high-density polyethylene (HDPE) pipes would be installed along the length of the land bridge to allow for flow passage through and under the land bridge. Clean rocks, such as river gravel, quarry spalls, or similar rocks, would then be placed between the two rows of super sacks or large rocks encompassing the culverts to form the access road for heavy equipment. The sacks or rocks would be placed incrementally from the west bank eastward. Photograph 13 shows super sacks being installed in a riverine setting.

Photograph 13
View of Super Sacks in Use in a River

Source: McKenzie Watershed Council Available at: https://www.mckenziewc.org/south-fork-floodplain-enhancement-phase-ii/

With the temporary land bridge installed, gravel and sediment would be excavated and transported to the stockpile on Montgomery Island. Excavation would start approximately 1 foot in elevation above the water line and slope up toward the center of the mid-channel bar to prevent fish stranding when water is receding from the excavated area. Excavation activities would be conducted using excavators, a front-end loader, and trucks. The temporary land bridge would be incrementally removed (similar to installation) after excavation activities are complete, and the bank would be restored.

2.4.2 Phase 2

Phase 2 would be completed between 5 and 15 years after Phase 1. Building on Phase 1, Phase 2 would further protect the east and west banks from continued bank erosion, protect the fish return channel configuration downstream of the GF, and reduce potential for Sacramento River avulsion through the east bank and overbank areas, as well as accomplish the objective of restoring the geomorphic and hydraulic conditions of the Sacramento River channel at the GCID diversion while preserving the current function of the GF.

Phase 2 includes the following elements:

- Constructing three additional spur dikes on the east bank and four additional spur dikes on the west bank to reduce the potential for channel migration and bank erosion from the GF to the confluence of the intake bypass return channel and the Sacramento River.
- Installing additional rock protection riprap pads and a rock protection berm in the east overbank area to reduce the potential for Sacramento River avulsion through the east overbank area.
- Partially filling the scour hole and installing rock protection on the west bank near the scour hole to prevent failure of the GF and supporting banks near the GF.
- If needed, excavation of the mid-channel bar to balance proposed project-related fill quantities with associated cut quantities.

As further described in Section 2.7, conditions at the project site would be monitored after completing Phase 1. Depending on observations during that time, it is possible that not all Phase 2 elements would be determined to be necessary. If erosion of the west and east banks has ceased or dramatically slowed, additional spur dikes may not be required. If the scour hole shallows or poses reduced risk to the GF with the downstream banks bolstered, then partial fill may not be required. However, for planning purposes, all potential Phase 2 project elements are covered in this report. Sections 2.4.2.1 through 2.4.2.4 provide more detail on each proposed project element of Phase 2. Specifics on the proposed sequencing of each proposed project element are described in Section 2.5.

2.4.2.1 Additional East and West Bank Spur Dikes Construction

As part of Phase 2, the east and west banks between the GF and the fish return channel would be further stabilized, if needed, with a series of additional spur dikes. The need for these additional spur dikes would be confirmed during O&M activities after completing Phase 1 construction. A total of up to three and four spur dikes would be installed on the east and west banks, respectively. The purpose of the additional spur dikes would be to further direct flow away from the riverbanks and reduce bank erosion caused by the deposition of sediment on the mid-channel gravel bar. The spur dikes would aid in the long-term goal of returning and maintaining the river channel geometry to the original condition that was present when the GF was designed and constructed. Sediment transported in downstream flows would settle between the dikes, creating new substrate for riparian vegetation to establish upon.

The additional spur dikes would be constructed using the same methods as described in Section 2.4.1.1, involving additional rock placement below and above OHWM and temporary access to the east and west banks of the Sacramento River. GCID would also monitor and maintain these additional spur dikes after construction.

Using the same methods described in Section 2.4.1.1, areas between the additional spur dikes and the bank above the rock slope protection area may be planted after rock placement activities are complete if vegetation was removed in the vicinity. In riparian areas where temporary impacts would occur for access (the east bank sand bar), willows, cottonwoods, and other stump sprouting trees would be cut to the ground level and root systems left intact so they can resprout after project features are installed. After Phase 2 completion, resprouting would rapidly result in revegetation of these areas. Where feasible, this less-invasive clearing procedure would enable the fast regrowth in temporary impact zones.

2.4.2.2 Additional East Bank Rock Protection Riprap Pads and Rock Protection Berm

Phase 2 would also include stabilizing the overbank area between the GF and the Deseret Farms boundary road to the east to prevent an avulsion or undermining of the two other existing sheet piles that extend east from the GF (Photograph 12). The existing sheet piles currently prevent the scouring of a new channel through the east bank sandbar. A 50-foot-wide and 5-foot-deep layer of rock is proposed to be placed over the sheet piles below and above OHWM and run the entire length (approximately 1,700 feet) of the two existing sheet piles to the extent of the water's edge to protect the east bank adjacent to the GF. To construct this project element, a 5-foot-deep trench adjacent to the south of the sheet piles would be excavated and backfilled with rock. Removal of riparian vegetation surrounding the rock protection riprap pads would also be required prior to placement activities.

If a scour hole develops adjacent to the newly placed rock layer, rocks would slide or roll into the hole, partially filling the hole but still buttressing the sheet pile. The top of the rock layer would be placed at the same level as the top of the sheet pile wall, except where the sheet pile wall is deeply buried, which occurs at the east terrace. At those locations, the top of the rock layer would be leveled with the existing ground.

Construction of this project element also involves the construction of a 250-foot-long rock berm, which would be placed on top of the southern sheet pile to direct flow along the east bank toward the Sacramento River instead of on top of the east overbank. The rock berm would be constructed with large rocks, all sourced from a local quarry.

2.4.2.3 Scour Hole Fill and West Bank Rock Protection Near Scour Hole

The existing 26-foot-deep scour hole within the Sacramento River would be monitored. If it appears that the hole is deepening or that partial fill of the hole is needed to maintain GF function, the hole would be partially filled to protect the downstream end of the GF and to improve hydraulic conditions downstream of the GF to better meet the original design intent of maintaining uniform flow patterns past the fish return channel. Gravel and/or rock would be placed in the existing scour

hole from a barge. The scour hole is proposed to be filled to elevation 123 feet North American Vertical Datum of 1988 (NAVD88), which would leave a 10-foot depression where the scour hole is located versus the existing 26-foot-deep hole. The depth of scour may continue to increase as time passes; therefore, the rock placement volume may be modified to match pre-construction conditions. The scour hole would be filled vertically with a layer of gravel or rock covered by a second layer of minimum 6-inch rock. The rock placed against the downstream end of the GF would have a 5H:1V slope to reduce the potential for flow separation and formation of vertical eddies. Scour hole fill would be placed from the east bank or from the water via floating barge equipment. A temporary construction platform may be constructed from the east or west bank to near the scour hole to assist in delivery of rock and loading of barges.

The west bank rock protection would repair and extend downstream the existing rock revetment at the west bank of Montgomery Island adjacent to and immediately downstream of the GF. A continuous rock layer with a slope of 2H:1V would be placed against the existing bank. The revetment would extend approximately 650 feet downstream of the GF to stabilize and protect the west bank against high velocities occurring at the end of the GF. Construction could occur from the top of bank working waterward or from toe of bank waterward with land-based or barge-mounted equipment.

The band of vegetation along the rock protection area would be cut to the slope to allow rock placement. Vegetation would be able to stump sprout through the rock, reforming the riparian band after construction is completed. The bank above the rock slope protection area would be planted after rock placement activities are complete. Areas above the rock protection with soil substrates that can support rooted materials may be planted with willow, cottonwood, elderberry, alder, and sycamore propagules, which may consist of greensticks and trees grown in liners with roots. Two phases of planting may be required for the different propagule types. Greenstick installation would be conducted in the winter when cuttings are taken from local materials. Potted trees would generally be planted in the fall prior to winter dormancy periods and rainfall.

2.4.2.4 As-Needed Mid-Channel Bar Excavation

As noted in Section 2.4.1.4, the proposed project—both Phases 1 and 2—has been specifically designed to balance its new fill areas below OHWM with corresponding existing fill removal areas below OHWM to achieve a net zero fill balance. The additional Phase 2 spur dikes would direct flow away from the riverbanks, which in turn would reduce bank erosion. Flows would become increasingly focused to the center of the river channel and naturally remove remaining sediment on the mid-channel bar. The new fill below the OHWM from construction of Phase 2, including the spur dikes, would be expected to balance out to no net fill when factoring in the associated natural removal of existing mid-channel bar fill through the force of river water. If gravel is excavated from the mid-channel bar concurrent with project construction, a 1:1 mitigation ratio would be applied. If

mitigation for permanent impacts to open water is delayed either through 1) natural erosion of the mid-channel bar expected to occur as a result of project construction; or 2) excavation of sediment from the above-water portion of the mid-channel bar if natural erosion of the mid-channel bar is insufficient to compensate for fill of waters associated with project construction area, then mitigation will include re-establishment of open water habitat at a 1:1 mitigation ratio for temporary impacts and a 2:1 mitigation ratio for permanent impacts that accounts for temporal loss of waters.

To confirm that the mid-channel bar is eroding as envisioned due to installation of the additional spur dikes, GCID would conduct annual aerial and topographic surveys of the mid-channel bar. Although such an outcome is not anticipated, if net fill values below OHWM do not equate to net zero within 3 years of construction of Phase 2, to ensure that the proposed project causes no net fill, GCID would excavate sufficient gravel and sediment from the mid-channel bar to balance out any residual volumes of fill below OHWM. For example, considering that Phase 2 would result in 29,760 cy of rock fill below OHWM, if only 20,000 cy of existing mid-channel bar gravel and sediment eroded by the 3- year mark, GCID would remove 9,760 cy of additional gravel and sediment from the mid-channel bar.

If excavation from the mid-channel bar is needed, GCID would complete excavation activities in accordance with the same steps outlined in Section 2.4.1.4.

2.5 Construction Sequencing

The sequencing of the proposed project was determined based on a combination of factors, including the urgency in addressing bank erosion threats and ongoing erosion in proximity to the GCID fish outlet channel as well as seasonal work windows. The overall sequencing for the proposed project elements is anticipated to be as follows:

1. **Pre-Construction Biological Habitat Surveys and Site Preparation:** Pre-construction wildlife surveys would be conducted at the project site, including proposed access roads and staging areas, prior to completing any mobilization or construction work. If any special-status species are identified during pre-construction surveys, GCID would coordinate with state and federal agencies on appropriate avoidance and minimization measures to be implemented during construction. Site preparation may include the installation of nets or burlap sheeting on both banks of the river in the work area to prevent bank swallows from establishing nests in the work areas.
2. **Access Road Improvements and Vegetation Clearing/Trimming:** Access to the west bank on Montgomery Island would be via an existing vehicle bridge at the south end of the island. Existing haul roads on Montgomery Island would be used for construction equipment. Road widening is not anticipated on Montgomery Island; however, potential trimming of vegetation could be necessary for overhead clearance of large equipment.

Access to the east bank of the River would be through the Deseret Farms Orchard. Heading toward the Sacramento River, existing farm roads would be used that may require minimal widening or tree trimming. Once near the Sacramento River, the east bank easement that has been eroded away with the east bank would be rebuilt at the top of the bank. Rebuilding the east bank easement for construction equipment access would require removal of vegetation and some walnut trees east of the road, currently used for food production. Road widening on the east bank could also result in the removal of riparian trees located on the west side of the road adjacent to the river. Geotextile fabric and gravel would also be used to improve haul roads for construction equipment access.

3. **Construction Staging and Access:** Construction staging for the west bank spur dikes and west bank rock protection would occur on Montgomery Island where there are multiple disturbed areas suitable for storing equipment and materials. On the western bank, the access road to the work area would be immediately adjacent to the top of the slope, and some riparian tree removal is anticipated to be required at the east of the road where the scour hole would be filled. Minimal riparian tree removal is also anticipated to be required at the southern tip of Montgomery Island where the west bank rock protection is proposed.

   Construction staging for the east bank spur dikes and east bank protection work would occur in two designated areas: one would be just east of the GF, and the second would be in a low-vegetated area just east of proposed work area. To reach the work areas and nearby staging areas on the east bank, trees would be removed. Where possible, areas that lack riparian vegetation and support grassland adjacent to trees would be used for staging, and large-sized heritage valley oaks would be retained. Riparian tree removal between the access road and the spur dikes would be necessary in the sandbar work area. The staging area may be used to load and launch barges. It would require a temporary use easement and would be restored after construction is completed.

   As described in Section 2.4.2.3, it is anticipated that a temporary construction platform (or work ramp) extending from the east or west bank would be constructed to support barge-based operations for filling in the scour hole.

   If mid-channel bar activities are required, a temporary land bridge that would be constructed from the west bank of the Sacramento River to the mid-channel gravel bar would be constructed, as described in Section 2.4.1.4.

4. **Construction of Phase 1/Phase 2 Project Elements:** Elements described in Sections 2.4.1 and 2.4.2 would be constructed, with Phase 1 construction elements occurring in one sequence and Phase 2 construction elements occurring in a different sequence, repeating Steps 1 through 6. Specific project elements described in Sections 2.4.1.1 through 2.4.1.4 within Phase 1 or Sections 2.4.2.1. through 2.4.2.4 within Phase 2 could occur simultaneously within each phase.

5. **Restoration of Temporary Roads and Staging Areas:** Any fill used to create approach roads, a temporary construction platform, or a temporary land bridge would be removed, and the staging areas would be restored to pre-construction conditions. Orchard replanting would occur in the areas that were disturbed as part of construction staging activities. Tree replanting would also occur on Montgomery Island. Small container stock, including valley oak, western sycamore, black walnut, willows, white alder, and Fremont's cottonwood, would be planted on the east and west banks with irrigation.
6. **Demobilization:** GCID would demobilize equipment using the same access roads and existing vehicular bridge used to access the site.

2.6 Construction Schedule and Equipment

Phase 1 construction is anticipated to occur over one or two construction seasons, beginning as soon as all required permits are obtained, likely in late summer/fall 2026. Proposed Phase 2 construction is anticipated to occur over approximately two construction seasons between 5 to 15 years after Phase 1 or between 2031 and 2046. In-water work would be completed during the California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS)-recommended work window for this area (July 15 through October 31).

Construction equipment would include track-mounted dozers, tractors/loaders/backhoes, excavators, graders, scraper, cranes, an approximately 40-foot by 80-foot floating spud barge, assist vessels (20-to 50-foot length and 50 to 400 horsepower), forklifts, generators, welders, air compressors, and paving equipment. Table 2 identifies both heavy equipment that would be required to construct the proposed project and presents a conservatively estimated construction schedule. Hand tools and other miscellaneous machinery may also be required. Because construction would take place over multiple construction seasons, sequence construction phases 1 through 3 and 5 and 6 would likely need to be repeated each year in which construction occurs, extending the total duration of work to be completed each year. For planning purposes, it is conservatively assumed that in-water work could occur throughout the 3.5-month annual in-water work window and that upland work could occur for longer periods consistent with project permits.

Table 2
Proposed Construction Schedule and Equipment

Sequence	Construction Phase	Duration	Approx. Construction Year	Construction Equipment	Quantity
1	Pre-Construction Biological Surveys and Site Preparation	5 days	Every year construction occurs	Truck	2
				Generators	1
				Trailer	1
2	Access Road Improvements	10 days	2026	Backhoes	1
				Bulldozers	1
				Excavators	1
				Graders	1
				Haul trucks	1
3	Construction Staging	10 days	Every year construction occurs	Track-mounted dozers	1
				Tractors	1
				Loaders	1
				Backhoes	1
				Excavators	1
				Graders	1
				Haul trucks	4
				Forklifts	1
				Generators	1
				Welders	1
				Air compressors	1
4a	East and West Banks Spur Dikes Construction (Phase 1)	25 days	2026	Excavators	2
				Loaders	2
				Generator	1
				Haul trucks	4
4b	West Bank Protection (Phase 1)	20 days	2026	Excavator	1
				Loader	1
				Generator	1
				Haul trucks	4
4c	East Bank Rock Protection Riprap Pad (Phase 1)	25 days	2026	Excavator	2
				Loader	1
				Generators	2
				Haul trucks	4
				Bulldozer	1

Sequence	Construction Phase	Duration	Approx. Construction Year	Construction Equipment	Quantity
4d	As-needed Mid-Channel Bar Excavation	50 days	To be confirmed, in 2031 if needed	Loaders	1
				Excavators	2
				Graders	1
				Generators	1
				Haul trucks	4
4e	Additional East and West Banks Spur Dikes Construction (Phase 2)	30 days	To be confirmed, between 2031 and 2046	Excavators	2
				Loaders	2
				Generator	1
				Haul trucks	4
4f	Additional East Bank Rock Protection Riprap Pads and Rock Protection Berm (Phase 2)	10 days	To be confirmed, between 2031 and 2046	Excavator	2
				Loader	1
				Generators	2
				Haul trucks	4
				Bulldozer	1
4g	Scour Hole Fill and West Bank Rock Protection Near Scour Hole	40 days	To be confirmed, between 2031 and 2046	Excavators	2
				Clamshell bucket	1
				Bulldozer	1
				Front loader	2
				Haul trucks	2
				Floating barges	2
				Work boats	2
4f	As-needed Mid-Channel Bar Excavation	50 days	To be confirmed, between 2031 and 2046	Loaders	1
				Excavators	2
				Graders	1
				Generators	1
				Haul trucks	4
5	Restoration of Temporary Roads and Staging Areas	22 days	Following permanent completion of work at that project location	Excavators	2
				Haul trucks	4
				Welders	1
				Bulldozer	1
				Front loader	1
6	Demobilization	5 days	Every year	None	N/A

2.7 Operations and Maintenance

All river stabilization and restoration projects are prone to erosion from shifting channels, changing hydraulic conditions, and potential for extreme events occurring with unforeseen effects. Maintenance on the east and west banks would require access at the top of the banks and would likely entail repair of sections of bank that erode and repair of spur dikes through the addition of rock. The areas where the spur dikes are installed may require more frequent maintenance because the bank is not continuously protected. This more frequent maintenance would entail reshaping the bank, adding vegetation, and other means to reduce erosion along the riverbank slope.

GCID would also undertake appropriate inspection and maintenance measures, such as repair and replacement of damaged or dislodged rock slope protection, spur dikes, and bank protection, to control adverse changes in bed elevation or adverse river alignments that threaten to outflank or jeopardize the safety, integrity, or operability of the GF or fish return channel. Specific responsibilities regarding the bank protection measures would include maintaining signage and buoys, locating and marking navigation hazards within the Sacramento River, removing snags, and maintaining the riprap surfaces of project elements. Inspection activities would be conducted on an ongoing basis to identify any required maintenance, repair, replacement, or rehabilitation needs and to ensure the proper care and efficient operation of the various project elements.

Operation and maintenance of the east bank rock protection riprap pads, if needed, would require access to the site from the east side of the river. Maintenance may consist of placing additional rock to repair the spur dike and rock layers over the sheet piles, grading to fill in scour holes, placement of rock if other erosion occurs, and maintenance of access points to the east bank area.

Maintenance for the scour hole may require river access with barges or from a spur dike and would likely occur only when the GF is at risk of failure. Maintenance for the west bank adjacent to the scour hole would require access from Montgomery Island.

Annual inspection reports will be maintained. The annual report will compile all data from the checklists that are completed during inspections, address all inspections and maintenance that took place during the previous 12 months, and include the following:

- Checklists for all inspections
- Record of aerial, topographic, and/or bathymetric surveys performed
- Photographic record of overall conditions
- Photographic record of significant damage
- Summary of existing fill removed and new fill added at the project site
- Summary statement of the general vegetation conditions for the reporting period

3 Environmental Checklist

Project Title:	Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project
Lead Agency:	Glenn-Colusa Irrigation District 344 East Laurel Street Willows, California 95988
Contact Person:	Jeff Sutton
Project Location:	Sacramento River east and west banks between river miles 205/206; approximately 4 miles north of Hamilton City, California, just downstream of GCID's intake channel and adjacent to Montgomery Island
Project Sponsor:	Glenn-Colusa Irrigation District
General Plan Designation:	Butte County: Agriculture (AG) Glenn County: Intensive Agriculture Tehama County: Valley Floor Ag/Capay
Zoning:	Butte County: No Designation/Agricultural Glenn County: No Designation/Agricultural Tehama County: Primary Floodplain (PF)
Description of Project:	The Proposed Project includes two phases. Phase 1 includes the following elements: • Constructing eight spur dikes on the east bank and three spur dikes on the west bank • Installing rock slope protection downstream of the west bank spur dikes • Installing a rock protection riprap pad near the downstream sheet pile on the overbank east of the Gradient Facility • If needed, excavating the mid-channel bar Phase 2 includes the following elements: • Constructing three additional spur dikes on the east bank and four additional spur dikes on the west bank • Installing additional rock protection riprap pads and a rock protection berm in the east overbank area • Partially filling the scour hole and installing rock protection on the west bank near the scour hole • If needed, excavating the mid-channel bar
Surrounding Land Uses and Setting:	Surrounding land uses are rural and agricultural, characterized by a mix of orchards and farms.
Other Public Agencies Whose Approval Is Required:	Lake and Streambed Alteration Agreement from CDFW, NPDES Permit and 401 Water Quality Certification from CVRWQCB, USACE Section 404/Section 10 Individual Permit, CSLC Lease amendment

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?	No. GCID notified the Colusa Tribe – Cachil Dehe Band of Wintun Indians on June 17, 2025 (Anchor QEA 2025a). GCID received a request for additional details from the Colusa Tribe – Cachil Dehe Band of Wintun Indians on July 9, 2025 (Colusa Tribe 2025). Anchor QEA, on behalf of GCID responded to the request for additional information on July 9, 2025 (Anchor QEA 2025b). No further correspondence has been received.

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is potentially significant (before incorporation of mitigation measures) as indicated by the checklist.

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

3.2 Determination

On the basis of this initial evaluation:

☐ I find that the proposed subsequent activity COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards; and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects: a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards; and b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Printed Name	For

3.3 Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off site as well as on site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an environmental impact report (EIR) is required.
4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significance.

3.3.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c.	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d.	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

3.3.1.1 Affected Environment

The project area, which is an approximately 1-mile stretch of the Sacramento River, falls within three counties: Glenn, Butte, and Tehama. The visual setting mostly consists of the river itself, undeveloped riverbank, and the surrounding rural area with orchards and farms on both sides of the river, as well as in the distance. Visual features on the riverbanks include vegetation, bare earthen or eroded banks (refer to Photographs 2 through 7 in Section 2), and placed rock for river management (as depicted in Photographs 8 to 10 in Section 2). The larger landscape is mostly flat, undeveloped, and cultivated with agriculture. Rural roadways, local water distribution canals, and other infrastructure typical of rural agricultural areas in the Sacramento Valley are also in the project area. The project area contains no officially designated State Scenic Highways. A portion of State Route (SR) 70 has been officially designated by the California Department of Transportation (Caltrans) as a "State Scenic Highway"; however, that section is over 26 miles southeast of the project site. There are no designated Wild and Scenic Rivers in the project area.

3.3.1.2 Impact Evaluation

AES-1: Would the project have a substantial adverse effect on a scenic vista?

No Impact. The primary scenic features at the project site are the Sacramento River, riverbank, and the surrounding swath of agriculture. The proposed project would not obstruct the viewshed of a scenic vista during construction or permanently. Proposed project elements would be constructed at approximately the level of the river or riverbanks and constructed of natural materials and colors that

would blend with the existing riverscape, resulting in no potential views being adversely affected due to the proposed project. There would be no impact.

AES-2: Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The proposed project would not affect any rock outcroppings or historic buildings along a scenic highway. There are no designated state scenic highways within the project area, and the visual character of the project area would not be affected by the proposed project. There would be no impact.

AES-3: In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

No Impact. The existing visual character of the project site consists of the Sacramento River, riverbank, and agricultural lands. The project site and surrounding lands are zoned for agriculture and floodplain and are located in rural Butte, Glenn, and Tehama counties. The visual features of the proposed project, including spur dike construction, rock placement, and revegetation and replanting, would blend with the existing features of the project site and would not substantially degrade the existing visual character or quality of the project site and its surroundings. There would be no impact.

AES-4: Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

No Impact. No lighting or new buildings that could cause glare are proposed for the proposed project. No nighttime construction is proposed. Potential glare from daytime construction equipment at the project site would be short-term and temporary. The proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or be inconsistent with existing conditions. There would be no impact.

3.3.2 Agricultural and Forestry Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project, and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:		**Potentially Significant Impact**	**Less-Than-Significant Impact After Mitigation**	**Less-Than-Significant Impact**	**No Impact**
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b.	Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☒	☐
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?	☐	☐	☐	☒
d.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

3.3.2.1 Affected Environment

3.3.2.1.1 Environmental Setting

California is the leading state in agricultural production, providing hundreds of thousands of jobs statewide (USDA 2024). Approximately 24 million acres of land in California are dedicated to agriculture, comprising 24.07% of the total land acreage of the state (CDFA 2023; U.S. Census Bureau 2024). There are 68,400 farms and ranches that compose the total agricultural land in California (CDFA 2023). The state's agricultural production success can be attributed to the nearly year-long

growing season made possible by the unique geography, mild climate, and access to water for irrigation in the dry season (CDFA 2023). The Central Valley provides 8% of agriculture output by value over 20,000 square miles, which is less than 1% of United States farmland. Some of the predominant crop commodities include cereal grains, hay, cotton, vegetables, fruits, and nuts (USGS 2024). According to the California Department of Food and Agriculture, fruits, nuts and vegetables continue to be California's leading crop commodities, generating $18.9 billion of revenue in 2022 (CDFA 2023).

The project area is in the northern region of the Central Valley known as the Sacramento Valley (USGS 2024). The presence of mountains, including the Cascade Range to the north, the Sierra Nevada to the east, and the coast ranges to the west, along with the rivers and tributaries, create ideal conditions for farming. The proposed project is within Butte, Glenn, and Tehama counties, all of which are characterized by extensive and productive agricultural operations. The gross production value of agricultural commodities for Glenn County in 2022 was $581,950,000, with almonds, dairy milk, and rice as the top commodities (County of Glenn Department of Agriculture 2022). The estimated gross value of agricultural production in Butte County for 2023 totaled $573,853,302, with rice, almonds, and walnuts being the top commodities (Butte County Department of Agriculture 2023b). In Tehama County, the top commodities in 2022, at an estimated value of $121,070,900, were walnuts, almonds, beef cattle, prunes, and apiary (bees) (County of Tehama Department of Agriculture 2022). All three counties have experienced a recent decrease in agricultural output compared to past years, in part due to drought and decreased water allocations. As a result, many growers were forced to idle or fallow fields while others pulled orchards.

There is no forest land in the project area based on 2021 data from the National Land Cover Database (EROS 2021). Timberland is defined as "privately owned land, or land acquired for State Forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre" (California Government Code Section 51104). There are no mapped timberlands within the project area (CAL FIRE 2025a).

3.3.2.1.1 Applicable Regulations

3.3.2.1.1.1 Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) was established by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) to establish criteria for mapping location quality and quantity of agricultural lands. Farmland maps combine soil characteristics and land use information to document current agricultural lands and conversion of agricultural lands over time.

Under the California Department of Conservation (CDOC), Division of Land Resource Protection in the FMMP agricultural land is categorized by the following:

- **Prime Farmland.** Prime farmland constitutes the highest quality of land for sustained agriculture production. Agricultural land is designated Prime Farmland when land use criteria are met and when the chemical and physical soil characteristics meet the quality criteria established by the NRCS. Land use criteria are established by the FMMP and require agricultural lands to have been used for irrigated agriculture production at some point within the 4 years prior to the Important Farmland Map Date, which occurs every 2 years.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance land meets all the same criteria as Prime Farmland, with minor physical or chemical shortcomings such as greater slopes or less ability to hold moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Unique Farmland.** Unique Farmland is farmland used to produce the state's leading agricultural crops. Soils are typically lesser quality than other designations. Land must have been cropped at some time during the 4 years prior to the mapping date.
- **Farmland of Local Importance.** Farmland of Local Importance land is in production or is capable of production and is characterized as being economically important by each county's board of supervisors and local advisory committee.

Figure 5 shows the FMMP farmland designations for the project site. A small portion of the lands above the east bank within the project area and Butte County is on land designated Prime Farmland. The remainder of the project site is not within any lands designated by the FMMP as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Large swaths of land to the east/northeast of the project site in Butte County and to the south in Glenn County are designated as Prime Farmland. FMMP designated Grazing Land is adjacent to the project site on the east/southeast.

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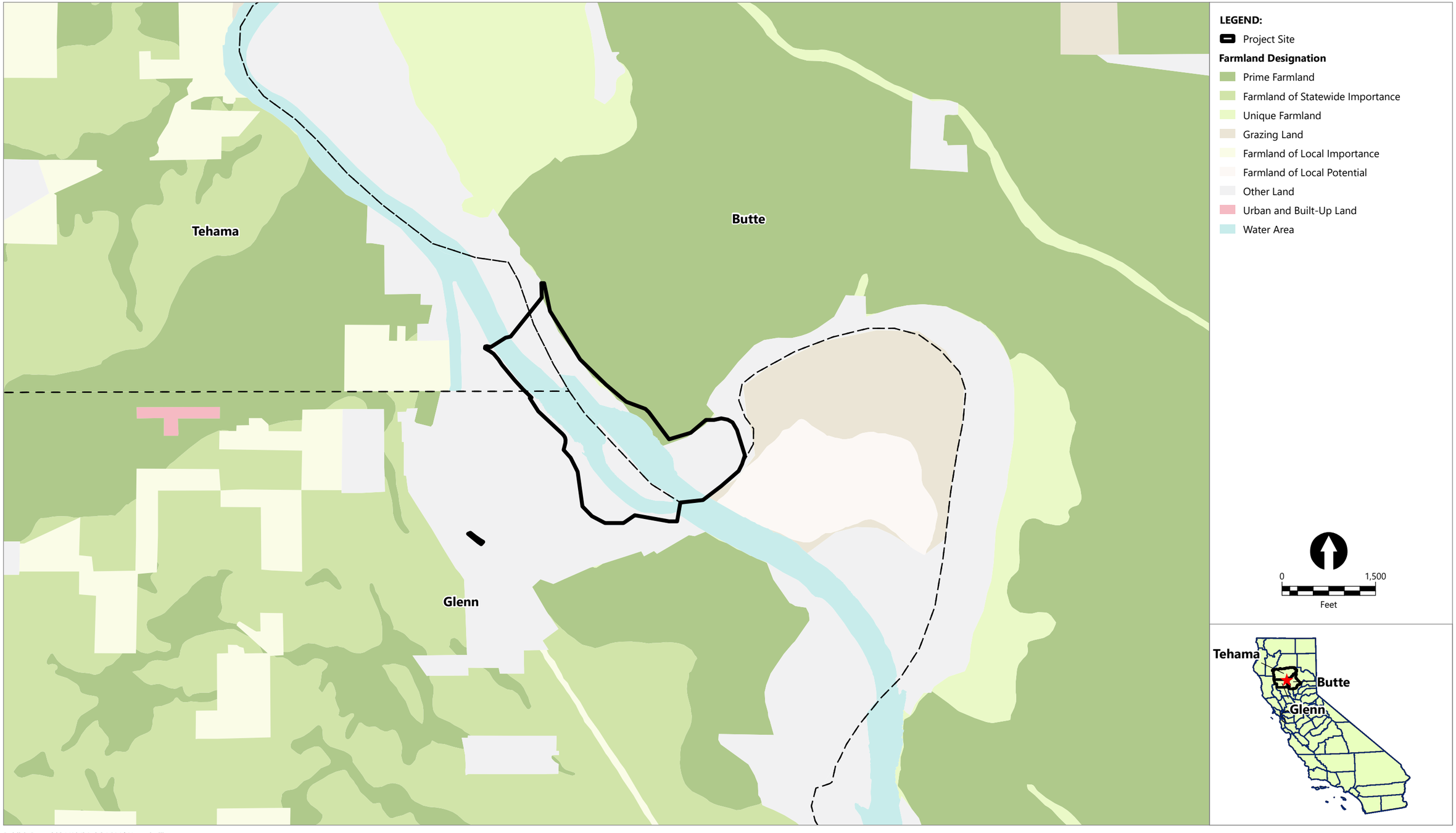

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Figure 5
Farmland Designation
Glenn County Irrigation District

3.3.2.1.1.2 Williamson Act

The Land Conservation Act of 1965, or the Williamson Act, was established by the California legislature to slow rapid development and protect agricultural lands. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open-space use. The Williamson Act establishes a framework ensuring continuation of local agricultural practices, continued stability for the agriculture industries, and open-space buffers. A small portion of the land above the east bank within the portion of project area that is mapped as Prime Farmland is also currently under a Williamson Act contract. The remainder of the project site does not include any parcels currently under Williamson Act contract.

3.3.2.1.1.3 California Farmland Conservancy Program

In 1995, the California Farmland Conservancy Program Act resulted in a statewide grant program, the California Farmland Conservancy Program (CFCP), which aims to support efforts to conserve agricultural land in California. CFCP grants encourage voluntary long-term stewardship and conservation of agricultural lands and efforts that protect farming and ranching operations facing development pressure. The program prioritizes local land use planning for urban growth and conservation of agricultural land and encourages decisions that are consistent with the state's agricultural land conservation policies. It also encourages improvements to enhance long-term sustainable agricultural uses.

3.3.2.1.1.4 Tehama County General Plan

The following local policies and measures pertaining to agriculture and forestry resources are included in the Economic Development and Open Space and Conservation elements of the *Tehama County General Plan* (Tehama County 2009):

- ***Policy ED-6.1:*** *The County will work toward the protection of agricultural lands from development pressures or uses that will adversely impact or hinder existing or foreseeable agricultural operations and consider land use alternatives such as buffers, green belts, zoning and other methods whenever feasible.*
- ***Policy ED-7.1:*** *The County will continue to preserve Tehama County's natural resources including: agriculture, timberlands, water and water quality, wildlife resources, minerals, natural resource lands, recreation lands, scenic highways, and historic and archaeological resources. The protection of natural resources is of the utmost importance and promoting business expansion, retention, and recruitment should compliment and enhance the natural resources while reducing negative impacts.*
- ***Policy OS-9.1:*** *The County will strive for the protection and enhancement of resource lands for the continued benefit of agriculture, timber, grazing, recreation, waterfowl, wildlife habitat, watersheds, and quality of life.*

3.3.2.1.1.5 Glenn County General Plan

The following local policies and actions pertaining to agriculture and forestry resources are included in the Land Use, Agricultural, and Economic Development elements of the *Glenn County General Plan* (Glenn County 2023):

- ***Policy LU 3-1:*** *Ensure that future development and land use decisions protect the integrity of agriculture and do not create a hardship for the county's farmers.*

3.3.2.1.1.6 Butte County General Plan

The following local goal and policies pertaining to agriculture and forestry resources are included in the Agricultural Resources Element of the *Butte County General Plan 2040* (Butte County 2023a):

- ***Goal AG-7:*** *Support resilient agricultural lands and practices.*

3.3.2.2 Impact Evaluation

AGR-1: Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less-Than-Significant Impact. The majority of the project site is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as identified by CDOC's FMMP. However, a small portion of the project site above the east bank falls within an area designated by FMMP as Prime Farmland. This portion of the project site contains a mature walnut orchard operated by Deseret Farms.

Implementation of the proposed project would require the removal of approximately 350 mature walnut trees within this Prime Farmland-designated area to accommodate widening an existing access road to a minimum width of 24 feet to facilitate necessary construction access and provide a staging area that is adequately offset from the eroding east bank.

Although the removal of orchard trees constitutes a minor loss of agricultural use, it does not equate to a permanent conversion of farmland. The proposed project would not change land use or zoning, and no permanent structures or incompatible uses are proposed. Deseret Farms will be compensated for the temporary loss of production. In addition, the proposed bank stabilization would also help prevent future erosion, thereby protecting farmland viability over the long term. Without the proposed project, more orchard trees may be lost as a result of erosion than the proposed number of trees for removal. Based on the limited scale of disturbance, temporary nature of construction access, and the long-term protective benefits to farmland, the impact on Prime Farmland and other FMMP-designated farmland types would be less than significant, and no mitigation is required.

AGR-2: Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less-Than-Significant Impact. Portions of the project site located in Butte and Glenn counties are zoned for agricultural use (AG-80 and AG-160 in Butte County; General Agricultural and Intensive Agricultural in Glenn County), consistent with the land's current use as orchard. These zoning designations would remain unchanged during and after proposed project implementation. The portion of the site in Tehama County is designated as Primary Flood Plain (PF) and is not zoned for agricultural purposes; therefore, it is not subject to agricultural zoning considerations.

Project activities—including the removal of mature walnut trees on the east bank to allow for temporary road widening and staging—would not introduce any permanent facilities or incompatible land uses. No changes to zoning, general plan land use designations, or other land use policy actions (e.g., variances or conditional use permits) are proposed. Construction access and staging would be temporary and would not preclude the future re-establishment of agricultural use in the affected area. The overall character and function of agricultural operations on adjacent lands would be preserved.

Approximately 40 of the walnut trees to be removed overlap with an area currently enrolled in a Williamson Act contract. The proposed project would not modify or cancel this contract and would not introduce any permanent use that conflicts with the contract's purpose of protecting agricultural land for long-term production. Stabilization of the riverbank would serve to protect farmland from further erosion, thereby supporting the ongoing viability of agricultural operations within the contracted area. Based on the temporary nature of construction activities, continued consistency with agricultural zoning, and absence of permanent incompatible uses, the proposed project would not conflict with existing zoning or any Williamson Act contracts. Impacts would be less than significant, and no mitigation is required.

AGR-3: Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?

No Impact. No forestland, timberland or timberland production lands exist within the project area. The proposed project would not conflict with or change any zoning or use of forest land, timberland, or timberland zoned Timberland Production. Therefore, there would be no impact.

AGR-4: Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No forest land exists near the project area. Therefore, there would be no impact.

AGR-5: Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Less-Than-Significant Impact. The project site is designated for agricultural use under the general plans of Butte County (Agriculture [AG]), Glenn County (Intensive Agriculture), and Tehama County (Valley Floor Ag/Capay). Zoning designations include AG-80 and AG-160 in Butte County, General Agricultural and Intensive Agricultural in Glenn County, and Primary Flood Plain (PF) in Tehama County. These designations allow for continued agricultural operations, and no changes to land use designations or zoning are proposed.

Proposed project implementation would require the removal of approximately 350 mature walnut trees on the east bank to accommodate access road widening and construction staging. Although this represents a short-term reduction in active agricultural use, it would not result in a permanent conversion of farmland. No permanent facilities or land use changes incompatible with agriculture would be introduced. The affected area remains suitable for agricultural use and may be restored to active cultivation following project completion. Deseret Farms has indicated their intent to replant the removed trees elsewhere on their property, minimizing the potential for long-term productivity loss.

Importantly, the proposed project is designed to stabilize the riverbank and reduce ongoing erosion that threatens agricultural lands in the project vicinity. By preventing further land loss and ensuring the effective operation of the GF and GCID fish screen, and water supply for irrigated agriculture, the proposed project would support the long-term preservation and resilience of surrounding farmland. There are no forest lands or lands designated or zoned for forest or timber production within or near the project area.

Given the proposed project's compatibility with existing agricultural land use patterns and protective benefits to farmland, the proposed project would not result in the indirect or permanent conversion of farmland or forest land. Impacts would be less than significant, and no mitigation is required.

3.3.3 Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

3.3.3.1 Affected Environment

The Sacramento Valley Air Basin (SVAB) is bounded by the Cascade Mountains on the northern end, the Sierra Nevada Mountains to the east, and the Northern Coastal Mountain Range along the west. These mountain ranges serve to confine air within the SVAB, and the lack of regular strong winds results in stagnation of air in the region and accumulation of pollutants within the SVAB. This results in generally poor air quality conditions in the region.

Air quality in the basin is impacted by several sources, including motor vehicle emissions, oil production and refining, agriculture, and inter-basin transport. Because of the project area's unique physical characteristics, the potential for pollution is very high. Several counties within the SVAB have ambient air quality issues, particularly with particulate matter 2.5 microns or smaller in diameter ($PM_{2.5}$) and ground-level ozone (O_3). Although $PM_{2.5}$ is emitted directly from various sources, including motor vehicles, both $PM_{2.5}$ and O_3 are formed by chemical reactions in the atmosphere and are heavily influenced by the abundance of oxides of nitrogen (NO_X), which is emitted through combustion.

3.3.3.1.1 Air Pollutants

Air pollutants are defined as two general types: 1) criteria air pollutants, representing pollutants for which the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (ARB) have set health- and welfare-protective ambient air quality standards (National Ambient Air Quality Standards [NAAQS] and California Ambient Air Quality Standards [CAAQS]); and 2) toxic air contaminants (TACs), which may lead to serious illness or increased mortality even when present at relatively low concentrations. TACs generally do not have ambient air quality standards.

Criteria Air Pollutants

USEPA and ARB classify an area as attainment, unclassified, or non-attainment depending on whether the monitored ambient air quality data show compliance, lack of data, or noncompliance with the ambient air quality standards, respectively. The NAAQS and CAAQS relevant to the proposed project are provided in Table 3. Areas without monitoring data are considered unclassified and are generally treated as attainment areas. As discussed previously, the NAAQS and CAAQS are health-based standards. Table 4 includes information on the main health effects associated with exceeding the standards. ARB monitors NAAQS and CAAQS to protect public health. For example, if the state annual average $PM_{2.5}$ standard was met, approximately 1,000 premature deaths would be avoided annually (ARB 2015). Local air districts use the NAAQS and CAAQS to develop localized thresholds based on regional risk factors such as weather patterns and geography.

The criteria pollutants of primary concern to the proposed project are O_3, particulate matter 10 microns or smaller in diameter (PM_{10}), $PM_{2.5}$, carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Lead, hydrogen sulfide, and vinyl chloride would not be generated as part of the proposed project; therefore, these pollutants are not evaluated.

Table 3
National and California Ambient Air Quality Standards

Pollutant	Averaging Period	California Standards	National Standards	Health Effects
O_3	1-hour	0.09 ppm	--	Breathing difficulties, lung tissue damage
	8-hour[a]	0.070 ppm	0.070 ppm	
PM_{10}	24-hour	50 µg/m^3	150 µg/m^3	Increased respiratory disease, lung damage, cancer, premature death
	Annual	20 µg/m^3	--	
$PM_{2.5}$	24-hour[b]	--	35 µg/m^3	Increased respiratory disease, lung damage, cancer, premature death
	Annual	12 µg/m^3	9 µg/m^3	
CO	1-hour	20 ppm	35 ppm	Chest pain in heart patients, headaches, reduced mental alertness
	8-hour	9.0 ppm	9 ppm	
NO_2	1-hour	0.18 ppm	0.100 ppm[c]	Lung irritation and damage
	Annual	0.030 ppm	0.053 ppm	
SO_2	1-hour	0.25 ppm	0.075 ppm[c]	Increases lung disease and breathing problems for asthmatics
	24-hour	0.04 ppm	0.14 ppm	
	Annual	--	0.030 ppm	
Lead	30-day	1.5 µg/m^3	--	Increased body burden and impairment of blood formation and nerve conduction
	3-month	--	0.15 µg/m^3	
Sulfates	24-hour	25 µg/m^3	--	Decrease in ventilator function, aggravation of asthmatic symptoms, aggravation of cardiopulmonary disease

Pollutant	Averaging Period	California Standards	National Standards	Health Effects
Visibility-reducing particles	8-hour	In sufficient amount to give an extinction coefficient of >0.23 inverse kilometers (visual range to less than 10 miles with relative humidity less than 70%)	--	--
Hydrogen sulfide	1-hour	0.03 ppm	--	Odor
Vinyl chloride	24-hour	0.01 ppm	--	Short-term exposure: central nervous system effects—dizziness, drowsiness, and headaches; Long-term exposure: liver damage, cancer

Notes:
Source: ARB 2024
--: Not available

a. The federal 8-hour O3 standard is based on the annual fourth highest daily maximum 8-hour concentration, averaged over 3 years.
b. The federal 24-hour PM2.5 standard is based on the 3-year average of the ninety-eighth percentile of the daily values.
c. The federal 1 hour NO2 and SO2 standards are based on the 3 year average of the ninety-eighth and ninety-ninth percentile of daily maximum values, respectively.

O_3 is a unique criteria pollutant because it is not directly emitted from proposed project-related sources. Rather, O_3 is a secondary pollutant, formed from the precursor pollutants reactive organic gases (ROG) and NO_X, which react to form O_3 in the presence of sunlight through a complex series of photochemical reactions. Thus, unlike inert pollutants, O_3 levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, O_3 impacts are indirectly addressed by comparing proposed project-generated emissions of ROG and NO_X to daily emission thresholds set by the applicable air quality management districts (AQMDs) and air pollution control districts (APCDs).

Table 4 summarizes the federal and state attainment status of criteria pollutants for the counties in the project area based on the NAAQS and CAAQS, respectively.

Table 4
Nonattainment Status by County and Standard

County	Nonattainment Designations	
	Federal NAAQS	State CAAQS
Butte	Ozone (8-hour), 2008 and 2015 – Marginal	$PM_{2.5}$ – Nonattainment PM_{10} – Nonattainment Ozone – Nonattainment
Glenn	Attainment/Unclassifiable, all pollutants	PM_{10} – Nonattainment
Tehama	Ozone (8-hour), 2008 and 2015 – Marginal	PM_{10} – Nonattainment Ozone – Nonattainment

Note:
Sources: ARB 2024; USEPA 2024a

Toxic Air Contaminants

TACs are airborne compounds that are known or suspected to cause adverse human health effects after long-term or short-term exposure. Cancer risk can result from long-term exposure, and non-cancer health effects can result from either chronic or acute exposure. Examples of TAC sources are diesel- and gasoline-powered internal combustion engines in mobile sources; industrial processes and stationary sources such as dry cleaners, gasoline stations, and paint and solvent operations; and stationary fossil fuel-burning combustion sources, such as power plants. Table 5 describes health effects of the possible TACs of concern monitored in California. Of the pollutants listed in Table 6, diesel particulate matter (DPM) from combustion engines in construction equipment would be the primary TAC of concern.

Table 5
Toxic Air Contaminant Health Effects

Pollutant	Health Effects
Benzene	Central nervous system depression, nausea, tremors, drowsiness, dizziness, headache, irritation of the eyes and respiratory tract. Chronic exposure may reduce the production of both red and white blood cells resulting in aplastic anemia. Exposure to benzene may result in an increased risk of contracting cancer.
Chlorobenzene	Headaches, numbness, sleepiness, nausea, and vomiting
DPM	Respiratory damage and premature death, and may result in increased risk of contracting cancer
Ethylbenzene	Eye and throat irritation; exposure to high levels can result in vertigo and dizziness
Ethylene glycol monobutyl ether	Eye, respiratory tract, and skin irritation and burns; inhalation may cause headaches and hemolysis (red blood cell breakage)
Hexane	Short-term exposure affects the nervous system and can cause dizziness, nausea, headaches, and even unconsciousness. Chronic exposure can cause more severe damage to the nervous system.

Pollutant	Health Effects
Isopropyl alcohol	Skin rash, itching, dryness and redness, irritation of the nose and throat. Repeated high exposure can cause headache, dizziness, confusion, loss of coordination, unconsciousness, and even death.
Methanol	Chronic exposure can cause visual problems and blindness, convulsions, coma, loss of consciousness, kidney failure, liver damage, low blood pressure, respiratory arrest, and damage to the central nervous system.
Naphthalene	May cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin
Propylene glycol monomethyl ether	Can irritate the noise, throat, and lungs causing coughing, wheezing, and/or shortness of breath, headaches, dizziness, lightheadedness, and passing out
Toluene	Irritation of the eyes and nose; weakness, exhaustion, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; numbness or tingling of the skin; dermatitis; liver and kidney damage
Xylenes (mixed)	Depression of the central nervous system, with symptoms such as headache, dizziness, nausea, and vomiting

Note:
Source: USEPA Integrated Risk Information System (USEPA 2021)

3.3.3.1.2 Applicable Regulations

3.3.3.1.2.1 Clean Air Act

USEPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead under the Clean Air Act (CAA). USEPA also establishes emission standards for on-road vehicles and off-road engines. The CAA forms the basis for national pollution control and delegates the enforcement of the federal standards to the states. In California, ARB and local air districts have the shared responsibility for enforcing air pollution regulations, with the local agencies having primary responsibility for regulating stationary emission sources. In the SVAB, the local air districts identified in Section 3.3.3.2.3 hold this responsibility for counties within each independent jurisdictional area.

In federal nonattainment areas, the CAA requires preparation of a state implementation plan (SIP) detailing how the state will attain the NAAQS within mandated time frames. In response to this requirement, local air quality agencies, in collaboration with other agencies, such as ARB, periodically prepare air quality management plans (AQMPs) designed to bring the area into attainment with federal requirements and to incorporate the latest technical planning information. The AQMP for each nonattainment area is then incorporated into the SIP, which is submitted by ARB to USEPA for approval. USEPA often approves portions and disapproves other portions of submitted SIPs.

3.3.3.1.2.2 California Clean Air Act

The California Clean Air Act (CCAA), adopted in 1988, requires nonattainment areas to achieve and maintain CAAQS and mandates that local air districts develop triennial plans for attaining CAAQS. ARB is responsible for establishing CAAQS, ensuring CCAA implementation, and regulating emissions from consumer products and motor vehicles. ARB established CAAQS for all pollutants for which

USEPA has established NAAQS, as well as for sulfates, visibility, hydrogen sulfide, and vinyl chloride. CAAQS are generally more stringent than NAAQS.

3.3.3.1.2.3 Local Air Districts

California's air quality is monitored and regulated at the state level by ARB and at the local and regional level by APCDs or AQMDs. The role of the air districts includes developing clean air plans and CEQA guidance. In the SVAB, the AQMDs/APCDs hold this responsibility for counties within each independent jurisdictional area. The AQMDs/APCDs are responsible for implementing federal and state regulations in the air basin, permitting stationary sources of air pollution, and developing the local elements of the SIP. In addition to permitting and rule compliance, air quality management by the AQMDs and APCDs is also accomplished through development of regional CEQA significance thresholds and mitigation measures. Thresholds of significance are generally based on the CAAQS and NAAQS and represent a regional approach to meeting CAAQS and NAAQS recognizing the air districts attainment status, emission sources, and regional geography.

The project area lies within three counties, and each county has a separate APCD responsible for attaining and maintaining the NAAQS and CAAQS within their respective jurisdictions. These districts are the Glenn County Air Pollution Control District (GCAPCD), Butte County Air Quality Management District (BCAQMD), and Tehama County Air Pollution Control District (TCAPCD). The currently applicable air quality plan for the project area is the latest edition of the Northern Sacramento Valley Planning Area (NSVPA) Air Quality Attainment Plan (SVAQEEP 2024). All three air districts have adopted the control measures from this plan that are relevant to the proposed project.

3.3.3.2 Impact Evaluation

AIR-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less-Than-Significant Impact. The proposed project would involve construction activities that generate temporary air pollutant emissions from fossil fuel-powered construction equipment, including trucks used to transport material on-site and limited off-site movements and worker vehicles associated with construction activities, as well as from secondary dust arising from construction activities in unpaved areas. However, once construction activities are completed, the proposed project would not include any stationary sources of air emissions. Long-term operational emissions would be minimal, limited to infrequent and as-needed vehicle trips and equipment use for site maintenance. These maintenance-related activities would be intermittent, of much lower intensity than construction. As such, the proposed project would not result in substantial long-term operational emissions of criteria air pollutants.

The project site spans three air districts: TCAPCD, BCAQMD, and GCAPCD. The BCAQMD CEQA Air Quality Handbook (BCAQMD 2024) and TCAPCD CEQA Handbook (TCAPCD 2015) provide applicable thresholds of significance and guidance for evaluating air quality impacts. GCAPCD does not have a published CEQA handbook; however, its jurisdictional context has been considered in the regional emissions analysis. The BCAQMD handbook is the most recently published guidance document and provides thresholds that are equivalent to those of TCAPCD.

Construction-related emissions for the proposed project were quantified using CalEEMod and applied to applicable thresholds published by the three relevant air districts, which account for equipment types, usage rates, construction phases, and localized meteorological conditions. Construction emissions for the proposed project were compared to CEQA significance thresholds from the TCAPCD and BCAQMD CEQA handbooks. As shown in Table 6, no thresholds for significance were exceeded based on the projected emissions of the proposed project.

Table 6
Air Quality Impacts Significance Threshold Comparison

	Estimated Proposed Project Emissions		Threshold Evaluation			
Pollutant	Annual Average (lb/day)	Tons/Year	TCAPCD (lb/day)	BCAPMD (lb/day)	GCAPCD (lb/day)	Exceeds Thresholds ?
NO_X	6.87	1.25	25	137	n/a	No
ROG	0.90	0.16	25	137	n/a	No
PM_{10}	0.90	0.16	80	80	n/a	No

Sources: CalEEMod 2023; TCAPCD 2015; BCAQMD 2024

Because construction emissions would be temporary and below threshold levels, and because the proposed project would not result in significant ongoing operational emissions, the proposed project would not conflict with or obstruct the implementation of applicable regional air quality plans. Therefore, the impact would be less than significant, and no mitigation is required.

AIR-2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment under an applicable federal or state ambient air quality standard?

Less-Than-Significant Impact. The proposed project is located within the NSVPA, which includes Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba counties. These counties jointly participate in regional air quality planning and have adopted the 2024 Triennial Update to the Air Quality Attainment Plan (SVAQEEP 2024). According to this plan, the counties of Butte and Tehama are designated as nonattainment of the ozone CAAQS. Butte County is also designated as marginal

nonattainment of the federal 8-hour ozone NAAQS. Glenn County is designated as attainment for all NAAQS and CAAQS. The project area is in attainment (or unclassified) for all other air pollutants (SVAQEEP 2024).

Based on these designations, the non-attainment pollutants of concern for the proposed project are O_3 and its precursors, NO_X and ROG. All other criteria pollutants in the project area are in attainment or unclassified status under applicable air quality standards. The proposed project was examined according to BCAQMD's screening criteria for construction-related impacts. The examination revealed that the proposed project meets all of the screening criteria, and therefore construction of the proposed project would result in a less-than-significant impact from criteria air pollutant and precursor emissions. Accordingly, a detailed air quality assessment is not required.

Following construction, the proposed project would not include any stationary sources of air emissions. Operational activities would be limited to occasional, short-term vehicle trips and equipment use for inspection and maintenance, and no significant emission-producing work activity is expected to occur. Vehicle trips and equipment use associated with site maintenance would be far less than needed for proposed project construction and would be temporary and intermittent in nature. As such, the proposed project would not result in substantial long-term operational emissions of criteria air pollutants. Therefore, the proposed project's contribution to a cumulative non-attainment criteria pollutant impact would be less than significant.

Mitigation: Although impacts would be less than significant and mitigation is not required, mitigation measure MM-AIR-1 would be implemented to further reduce potential emissions:

MM-AIR-1: BCAQMD Best Practices to Minimize Air Quality and GHG Impacts

GCID will require contractors, through project contract specifications, and maintenance staff to implement the BCAQMD's Standard On-Site Mitigation Measures for Criteria & GHG Emissions (BCAQMD 2024) to reduce impacts from NOx, diesel PM exhaust from construction equipment, and fugitive dust. Specifically:

1. *All on- and off-road diesel equipment will not idle for more than five minutes. Signs will be posted in the designated queuing areas and/or job sites to remind drivers and operators of the five-minute idling limit.*
2. *Idling, staging and queuing of diesel equipment within 1,000 feet of sensitive receptors is prohibited.*
3. *All construction equipment will be maintained in proper tune according to the manufacturer's specifications. Equipment must be checked by a certified mechanic and determined to be running in proper condition before the start of work.*

4. *Implement ARB-verified diesel emission control strategies as needed to comply with the State In-Use Off-Road Regulation and Truck and Bus Regulation.*
5. *To the extent feasible, truck trips will be scheduled during non-peak hours to reduce peak hour emissions.*
6. *Proposed truck routes should be evaluated to define routing patterns with the least impact to residential communities and sensitive receptors and identify these receptors in the truck route map*
7. *To reduce dust emissions, all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day or as needed, as determined by GCID, based on conditions.*
8. *All haul trucks transporting soil or other loose material off-site will be covered.*
9. *All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day or as needed. The use of dry power sweeping is prohibited.*
10. *All vehicle speeds on unpaved roads will be limited to 15 mph.*
11. *A publicly visible sign will be posted with the telephone number and person to contact at GCID regarding dust complaints. This person will respond and take corrective action within 48 hours. The air district's phone number will also be visible to ensure compliance with applicable regulations.*

Residual Impact: Implementation of MM-AIR-1 would further reduce construction emissions, and impacts would remain less than significant.

AIR-3: Would the project expose sensitive receptors to substantial pollutant concentrations?

Less-Than-Significant Impact After Mitigation. For the purposes of air quality, public health, and safety, sensitive receptors are generally defined as people that would be particularly susceptible to disturbance from dust and air pollutant concentrations or other disruptions associated with construction activities associated with the construction of the proposed project and maintenance activities. Sensitive receptors generally include children, the elderly, asthmatics, and the infirmed at schools, day care centers, libraries, hospitals, residential care centers, parks, and churches, and others who are more susceptible to respiratory distress and other air quality-related health problems such as asthma, than the general public. Some sensitive receptors are considered to be more sensitive than others due to pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air

quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system. Residences, churches, parks, and schools located adjacent to the project site would be considered sensitive receptors. The project site is located more than 1,200 meters (3,900 feet) from the nearest residential receptors, located due west of the project site at the corner of County Road 2 and County Road V. Additional sensitive receptors are located at the Capay School, approximately 2,700 meters (8,800 feet) due west of the project site, and at increasingly distant locations beyond. Additional sensitive land uses, such as churches or parks, are located at greater distances. No sensitive receptors are located immediately adjacent to or within close proximity of the project footprint.

During project construction, emissions of air pollutants—including DPM and combustion by-products from heavy-duty equipment and vehicle trips—would occur. DPM is classified as a TAC by ARB because it is known to increase the risk of cancer and/or other serious health effects, ranging from eye irritation to neurological damage. Construction of the proposed project would generate DPM and gasoline fuel combustion emissions, which are considered to be TACs. The majority of TAC emissions would be generated during construction due to the use of heavy-duty off-road equipment. The bulk of these emissions would occur during the short-term construction period.

Although TACs and fugitive dust emissions would be present during active construction, the distance between the project site and the nearest sensitive receptors, in combination with the temporary and phased nature of the work, would substantially reduce the potential for significant exposure. Construction-related impacts would be less-than-significant.

Following construction, maintenance and operation of the proposed project would not include any stationary sources of air emissions. Vehicle trips and equipment use associated with site maintenance would be less than needed for proposed project construction and would be temporary and intermittent in nature. Therefore, the exposure of sensitive receptors during project operations and maintenance would be less than significant, and no mitigation is required.

Mitigation: To further minimize emissions and protect nearby receptors during construction, the proposed project includes implementation of mitigation measure ***MM-AIR-1: BCAQMD Best Practices to Minimize Air Quality and GHG Impacts*** (see AIR-2), which includes requirements to minimize idling times for trucks and equipment to 5 minutes; ensuring that construction equipment is maintained in accordance with manufacturer's specifications; watering exposed surfaces twice a day to minimize fugitive dust emissions; and other measures that would minimize project-generated TAC emissions.

Residual Impact: Implementation of MM-AIR-1 would further reduce construction emissions, particularly of DPM and fugitive dust, and impacts would remain less than significant.

AIR-4: Would the project result in other emissions (such as those leading to odors) affecting a substantial number of people?

Less-Than-Significant Impact. The proposed project would not create other emissions, such as those leading to objectionable odors affecting a substantial number of people. Equipment used during proposed project construction activities may emit odors associated with combustion of diesel and gasoline fuels. However, these emissions would be temporary and intermittent in nature, and the project site is not situated next to any locations that would be occupied by large numbers of people. Therefore, impacts would be less than significant, and no mitigation is required.

3.3.4 Biological Resources

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

3.3.4.1 Affected Environment

Site reconnaissance surveys were conducted by Sapere Environmental (April 29, 2021, May 5, 2022, January 10, 2025), Wood Biological Consulting (January 10, 2025), Anchor QEA (April 30, August 18, November 5, 2021, and August 16, 2024), and Aquatic Resources Consulting Scientists (November 17, 2021; January 13, 2022; and August 16, 2024) to document existing vegetation, determine existing terrestrial and aquatic habitat conditions, conduct a wetland delineation, and to evaluate on-site habitat suitability in the project area (GCID 2025a; Sapere Environmental 2025). Reviews of applicable databases and available, recent and historical observations of special-status wildlife and fish species were conducted, including the California Natural Diversity Database

(CDFW 2025) and U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (2025) to identify recorded special-status species occurrences in the project vicinity.

3.3.4.1.1 Terrestrial Habitat and Vegetation Communities

The project area is within a rural area, with agricultural fields on both sides of the Sacramento River. The lands within the project area are largely undeveloped, and the vegetation along the banks is subject to natural river forces that erode the alluvial banks and scour vegetation annually. Habitat along the banks of the Sacramento River adjacent to the GF and downstream of the intake channel consists mostly of native and limited non-native riparian vegetation. Non-native grasslands dominate areas without riparian vegetation east and west from the top of bank.

Herbaceous species and tree seedlings occur in the active zone adjacent to the low-flow channel on the east and west banks, forming sandbar willow (*Salix exigua*) thickets. Along the water's edge, sandbar willow is the dominant species with white alder *(Alnus rhombifolia*), box elder (*Acer negundo*), and California sycamore (*Platanus racemosa*) seedlings and saplings also present. Herbaceous vegetation includes reed canary grass (*Phalaris arundinacea*), California bulrush (*Schoenoplectus californicus*), Bermuda grass (*Cynodon dactylon*), crabgrass (*Digitaria ciliaris* var. *ciliaris*), umbrella sedge (*Cyperus eragrostis*), speedwell (*Veronica anagallis-aquatica*), and other species tolerant of frequent disturbance.

Seedling and sapling willow trees were observed to be harvested by beavers, and multiple years of cut stems were seen at the water line and a few feet above the elevation of the low-flow channel. Black locust (*Robinia pseudoacacia*), gum (*Eucalyptus* spp.), and tamarisk (*Tamarix parviflora*) were also infrequently observed.

Two small sandbars within the Sacramento River and south of the GF are primarily composed of sand and gravel, with very sparse vegetation growing on top of the bars. Both sandbars are characterized by the presence of early successional riparian species such as sandbar willow, arroyo willow (*Salix lasiolepis*), cottonwood (*Populus fremontii*), and white alder. The trees are limited in age to between seedlings and a few years old due to beaver predation and river scour. Herbaceous species that occur on the vegetated portions of the sandbars include Baltic rush (*Juncus balticus*), goldenrod (*Euthamia occidentalis*), reed canary grass, water grass (*Echinochloa crus-galli*), purpletop vervain (*Verbena bonariensis*), umbrella sedge, sneeze weed (*Helenium puberulum*), and bungleweed (*Lycopus americanus*). Woody and herbaceous vegetation on the sandbars is scoured in varying amounts in areas where Sacramento River waters rise with rainfall and snow runoff.

The more heavily scoured areas in the center of the small sandbars support low-growing annual species. Common plant species in the scoured areas include lupine (*Lupinus* sp.), American bird's foot trefoil (*Acmispon americanus*), Oregon golden aster (*Heterotheca oregona* var. *compacta*), tropical

horse weed (*Erigeron sumatrensis*), Jerusalem oak goosefoot (*Dysphania botrys*), and hairy rupture wort (*Herniaria hirsuta* var. *hirsuta*).

On Montgomery Island's west bank, a low bench occurs a few feet above the low-water elevation. It is situated below the limit of the active floodplain and supports rows of medium-sized white alder, box elder, Oregon ash (*Fraxinus latifolia*), California sycamore, sandbar willow, Pacific willow (*Salix lasiandra*), and arroyo willow. Herbaceous vegetation in this zone consists of annual and perennial species both native and non-native to California. Mugwort (*Artemisia douglasiana*), eggleaf spurge (*Euphorbia oblongata*), smilo grass (*Stipa miliacea*), Italian rye grass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and wild oat (*Avena fatua*) were commonly observed in this zone. At the top edge of the riverbank, above the OHWM elevation, black walnut (*Juglans hindsii*) and blue elderberry (*Sambucus mexicana*) were commonly observed.

A gravel access road loosely parallels the bank around the exterior of Montgomery Island. Where the road is located, there is a break in the vegetation where wild oats and annual brome grassland occur with dominant species such as ripgut brome, wild oat, soft chess, Bermuda grass, mustards, and purpletop vervain. Material excavated from the mid-channel bar in 2022 was placed on Montgomery Island. These areas of bare gravelly or sandy material are devoid of vegetation. The larger mid-channel gravel bar is essentially devoid of vegetation because it was excavated in 2022.

The low terrace above the active floodplain on the west bank is distinct with significantly taller riparian vegetation, including 40- to 60-foot-tall cottonwood, maturing black walnut, and valley oak trees (*Quercus lobata*), designated as Fremont cottonwood forest and woodland. The low terrace supports abundant California pipevine (*Aristolochia californica*), which was observed vining across the grasslands and climbing up the lower limbs of trees. California grape (*Vitis californica*) was also found climbing in the understory of the riparian vegetation. The understory in some areas consists of expanses of creeping wild rye (*Elymus triticoides*), mugwort, wild rose (*Rosa* spp.), and poison oak (*Toxicodendron diversilobum*). Drier areas on the low terrace of Montgomery Island support purple needlegrass (*Stipa pulchra*). Areas that lacked creeping wild rye support ripgut brome, wild oat, and smilo grass, and forbs include miniature lupine (*Lupinus bicolor*) and big pod lupine (*Lupinus pachylobus*), which can intergrade with miniature lupine and sky lupine (*Lupinus nanus*). Rows of riparian restoration plantings were previously installed in the northern part of the island.

The east bank supports a gravelly overbank occupying an approximately 430-foot-wide by 1,600-foot-long area. The overbank area is populated with seedlings and smaller-sized sandbar willow, forming willow thickets that are subject to active river turbulence and beaver predation. Tamarisk, cottonwood, sycamore seedlings, and small trees were also present in fewer numbers.

The east overbank area is characterized by frequent disturbance by river flows, and less than 50% of the total ground surface supports vegetation due to annual scouring events within the active

channel. Most of the east overbank area is characterized by the presence of barren ground, gravel, rocks, or sand.

The eastern side of the overbank area, adjacent to the east bank of the Sacramento River, supports an upland riparian woodland classified as Gooding's willow: red willow riparian woodland and forest with black willow, white alder, cottonwood, and arroyo willow, among others. This habitat occurs around an unnamed drainage channel originating on the top of the east bank.

The low terrace immediately transitions to walnut orchard east of the riparian vegetation. Several very large valley oak and sycamore trees occur east of the overbank area, north of the bank erosion zone.

3.3.4.1.2 Aquatic Habitat

Aquatic habitat within the project area is riverine with a varying topobathymetry and geomorphic structure. Depending on the season, river stage, water temperature, and other physical and ecological conditions, aquatic habitat in the project area may serve as the following: 1) a migration corridor for adult and juvenile salmonids and green sturgeon; 2) transient rearing habitat for juvenile salmonids and green sturgeon during their downstream migrations to the estuary and ocean; and 3) staging/resting habitat for adult salmonids and sturgeon on their spawning migrations. The habitat suitability for the various life stages of salmonids and green sturgeon is largely dependent on seasonal river flow levels and water temperatures. Under typical summer and fall river flows in the project area (≤6,000 cubic feet per second [cfs]), the east side-channel around the mid-channel bar, where spur dikes would be constructed, is the primary channel carrying most of the river flow, whereas the west side-channel, where construction of spur dikes and the potential temporary land bridge would occur, is a secondary channel that is shallower, narrower, and carries less river flow. Most of the fish migration and foraging habitat occurs upstream, downstream, and in the east side-channel during river discharges ≤6,000 cfs.

Since the 2022 mid-channel bar excavation, river discharges exceeding about 7,500 cfs have begun to partially inundate the margins of the mid-channel bar, with complete inundation occurring at flows above 11,500 to 12,000 cfs. Vegetation on the bar is only very sparse and herbaceous, which provides no shaded riparian aquatic habitat value or cover during inundation under high river flows in the action area. One particular habitat unit—the scour pool formed at the downstream end of the mid-channel bar near the GCID fish bypass return outfall, although reduced since the 2022 bar excavation—is known holding habitat for adult sturgeon but also may still favor excessive predation on juvenile salmonids returning to the main river channel from the fish bypass. Peak emigration periods during the primary GCID diversion season (April to October) may pose the greatest risk to juvenile salmonids concentrated in the bypass discharge, where predators can take advantage of the pool depth, cover, and complex hydraulic flow patterns (i.e., back eddies) created by the angular

confluence of side channels around the mid-channel bar. This phenomenon is well known to fish passage engineers, and fish bypass design criteria to avoid such conditions are documented in NMFS's (1997) fish passage engineering guidance. The original design of GCID's new fish screens and the U.S. Army Corps of Engineers (USACE)'s GF conformed to this guidance, but subsequent evolution of the mid-channel bar has adversely impacted the original design intent and function for the fish bypass outfall.

3.3.4.1.3 Wetlands and Jurisdictional Waters

Potentially jurisdictional water features were identified during the delineation of the study area conducted on April 30, August 18, and November 5, 2021; and August 16, 2024, by Anchor QEA botanist and biologist Julia King (Anchor QEA 2022). Within the study area, 60.51 acres of Sacramento River waters, 13.15 acres of wetlands, and 0.09 acre of intermittent drainage below the OHWM were identified. Scrub-shrub wetlands total 7.79 acres, forested wetlands total 4.23 acres, palustrine aquatic wetland total 0.12 acre, palustrine seasonal wetlands total 1.01 acre, and ephemeral drainage totals approximately 1,010 linear feet and is 3.8 feet wide, totaling 0.09 acre. There were approximately 13.15 acres of wetlands identified that are regulated under Section 404 of the Clean Water Act (CWA) and 51.05 acres of other waters of the United States (68.51 acres of the Sacramento River and 0.09 acre of ephemeral drainage) were identified that are regulated under Section 10 of the Rivers and Harbors Act and Section 404 of the CWA.

3.3.4.1.4 Special-Status Wildlife Species

Based on site reconnaissance conducted for the proposed project by Aquatic Resources Consulting Scientists (November 17, 2021; January 13, 2022; and August 16, 2024) and Sapere Environmental (most recently on January 10, 2025); a review of available databases and literature; and familiarity with local fauna, a total of 45 special-status wildlife species were considered as part of this assessment (Sapere Environmental 2025; GCID 2025a). Of these, the presence of 17 species were ruled out based on the lack of suitable habitat, local range restrictions, regional extirpations, lack of connectivity between areas of suitable or occupied habitat, and/or incompatible land use and habitat degradation/alteration of on-site or adjacent lands (see Appendix B). Table 7 identifies the 28 special-status wildlife species that have the potential to occur on the project site, have designated critical habitat within the project area, or are of significant local concern and could be directly or indirectly impacted by the proposed project activities. Additional detail on these 28 species is presented in the following paragraphs.

Table 7
Special-Status Wildlife Species with Potential to Occur at the Project Site

Species Name Common Name	Status[1]
Invertebrates	
Valley elderberry longhorn beetle (*Desmocerus californicus*)	FT, CH
Crotch's bumble bee *(Bombus crotchii)*	SCE
Antioch Dunes anthicid beetle *(Anthicus antiochensis)*	SA
Sacramento anthicid beetle *(Anthicus sacramento)*	SA
Western bumble bee *(Bombus pensylvanicus*)	SA
Amphibians	
Western spadefoot *(Spea hammondii)*	FPT, SSC
Reptiles	
Northwestern pond turtle *(Actinemys marmorata)*	FTP, SSC
Birds	
Swainson's hawk (*Buteo swainsoni)*	ST
Western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*	FT, CH, SE
White-tailed kite *(*Elanus leucurus)	FP
Bald eagle *(Haliaeetus leucocephalus)*	SE, FP
Bank swallow *(Riparia riparia)*	ST
Oak titmouse *(Baeolophus inornatus)*	BCC-CC
Bullock's oriole *(Icterus bullockii)*	BCC-CC
Osprey *(Pandion haliaetus)*	WL
Nuttall's woodpecker *(Picoides nuttallii)*	BCC-CC
Lawrence's goldfinch *(Spinus lawrencei)*	BCC-CC
Mammals	
Pallid bat *(Antrozous pallidus)*	SSC, WBWG-L
Silver-haired bat *(Lasionycteris noctivagans)*	SA, WBWG-M
Hoary bat *(Lasiurus cinereus)*	SA, WBWG-M
Western red bat *(Lasiurus frantzii)*	SSC, WBWG-H
Long-eared myotis bat *(Myotis evotis)*	SA, WBWG-M
Yuma myotis bat *(Myotis yumanensis)*	SA, WBWG-L
North American porcupine *(Erethizon dorsatum)*	SA

Species Name Common Name	Status[1]
Fish	
Central Valley Distinct Population Segment (DPS) steelhead *(Oncorhynchus mykiss)*	FT, CH
Central Valley spring-run ESU Chinook salmon *(O. tshawytscha)*	FT, CH
Sacramento River Winter-run ESU Chinook salmon *(O. tshawytscha)*	FE/SE, CH
SDPS Green sturgeon *(Acipenser medirostris)*	FT/SSC, CH

Notes:
Explanation of State, Federal, and other listing codes:
CH Critical Habitat (Proposed or Final) is designated
FE Federally listed as Endangered
FPT Federally proposed for listing as Threatened
FT Federally listed as Threatened
SA "Special Animals" is a general term that refers to all of the taxa included in the CNDDB, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." CDFW considers the taxa on this list to be those of greatest conservation need.
SE State listed as Endangered
ST State listed as Threatened
SCE State candidate for listing as Endangered
SSC California Species of Special Concern
FP Fully Protected
WL Watch List
BCC (-CC) USFWS Birds of Conservation Concern. List of migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the Service's highest conservation priorities. CC – Coastal California Terrestrial Bird Conservation Region
WBWG (H, M, L, MH, ML) The Western Bat Working Group. H - High Priority indicates species that are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology, and known threats; M – Medium Priority indicates a lack of information to assess the species' status; L – Low Priority indicates relatively stable populations based on available data. The WBWG also uses intermediary designations including MH – Medium-High and LM – Low-Medium priorities
Sources: GCID 2025a, Sapere Environmental 2025

Valley Elderberry Longhorn Beetle

The Valley elderberry longhorn beetle (VELB) is an elongate, red-and-black-bodied beetle with long antenna. VELB measure 1/2 to 1 inch in length and are endemic to moist valley oak woodlands in the lower Sacramento and lower San Joaquin Valleys where elderberry bushes (*Sambucus* spp.) grow. VELB inhabit living, "stressed" elderberry bushes, and their presence is often inferred based on oval exit holes created when individuals leave the inner shrub to mate and feed. Eggs are laid in hollow stems measuring 2 to 8 inches in diameter at the base of the shrub, where larvae stay for up to 2 years before transforming into adults. The active period for adults occurs from March to June. This species is known to occur in three protected refuges: Sacramento National Wildlife Refuge, Sacramento River National Wildlife Refuge, and Stone Lakes National Wildlife Refuge. Specimens have also been collected along the Sacramento River in Glenn and Colusa counties.

At the project site, suitable nesting habitat is present among the numerous blue elderberry (*Sambucus mexicana*) shrubs scattered primarily among the mixed riparian forest and ruderal

vegetation communities west of the Sacramento River. Characteristic oval exit holes were present on numerous older blue elderberry shrubs observed during the January 10, 2025, site reconnaissance suggesting the presence of VELB. Removal or trimming of occupied elderberry shrubs could impact this species.

Crotch's Bumble Bee

The Crotch's bumble bee is a state candidate for listing as endangered under the California Endangered Species Act (CESA). Crotch's bumble bees are native to California and primarily range throughout the Central Valley but have a wider distribution ranging from the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. The species is nonmigratory and has experienced a sharp population decline and may be extirpated in the northernmost part of its range. Crotch's bumble bee, active from May through September, inhabits open grasslands and scrublands and builds nests underground, often utilizing abandoned rodent burrows. Food plants consist of milkweed (*Asclepias* spp.), pincushion (*Chaenactis* spp.), lupine (*Lupinus* spp.), burclover (*Medicago* spp.), phacelia (*Phacelia* spp.), and sage (*Salvia* spp.). Other nectar sources include snapdragon (*Antirrhinum* spp.), clarkia (*Clarkia* spp.), poppy (*Eschscholzia* spp.), and buckwheat (*Fagopyrum* spp.).

Suitable nesting habitat is present throughout all vegetation communities within the project area with the exception of the riverine and sandbar land cover types. Suitable food plants are present within the project area comprising lupines primarily located within the non-native annual grassland and ruderal vegetation communities. However, Crotch's bumble bees may use other host plants throughout the project area.

Antioch Dunes Anthicid Beetle

The Antioch Dunes anthicid beetle resembles an ant with a modified front tibia to facilitate digging in loose sandy soils and bare, unvegetated cover. They are nocturnally active and scavenge for dead insects, while remaining inactive during the day. Peak seasonal activity occurs from June to August but may extend into the fall. Adults overwinter in the soil and emerge in the spring to lay eggs. Larvae emerge in early summer.

In the project area, suitable habitat is present among the sandy soils on the east and west riverbanks as well as the sandbar, willow scrub, mixed riparian woodland, valley oak woodland, and ruderal vegetation communities of the project site. These areas support year-round foraging, breeding, refugia, and overwintering habitat. Permanent or temporary loss and/or disturbance of suitable sandy soil habitat along the east and west riverbanks and among ruderal habitat on either side of the Sacramento River could impact this species.

Sacramento Anthicid Beetle

The Sacramento anthicid beetle resembles an ant with a modified front tibia to facilitate digging in loose sandy soils. They prefer sandy areas with vegetated cover with some association with giant reed (*Arundo* spp.) and willow. They are nocturnally active and scavenge for dead insects, while remaining inactive during the day. Peak seasonal activity occurs from June to August but may extend into the fall. Adults overwinter in the soil and emerge in the spring to lay eggs. Larvae emerge in early summer.

In the project area, suitable habitat for the Sacramento anthicid beetle is present among the sandy soils on the east and west riverbanks as well as the sandbar, willow scrub, mixed riparian woodland, valley oak woodland, and ruderal vegetation communities of the project site. These areas support year-round foraging, breeding, refugia, and overwintering habitat. Permanent or temporary loss and/or disturbance of suitable sandy soil habitat along the east and west riverbanks and among ruderal habitat on either side of the Sacramento River could impact this species.

Western Bumble Bee

The western bumble bee inhabits open fields, grasslands, farmlands, and suburban areas. Western bumble bees build nest colonies in fields of tall grass but may also nest underground in crevices, burrows, old bird nests, and human-made objects. Colonies are formed in late spring. The species is a generalist forager requiring a variety of nectar and pollen plants, which it feeds on from spring through fall. Western bumble bees use decaying wood to overwinter at sites with proximity to sufficient spring flower diversity and abundance. Examples of flowering host plants include milkweed, blackberries (*Rubus* spp.), thistles (*Cirsium* spp.), sorrels (*Oxalis* spp.), lupines, vetches (*Vicia* spp.), sunflowers (*Helianthus* spp.), clovers (*Trifolium* spp.), and flowering trees including plum and cherry trees (*Prunus* spp.), locusts (*Robinia* spp.), and willows.

Suitable nesting habitat is present throughout the project area, particularly among the non-native annual grasslands, mixed riparian forest, valley oak woodland, willow scrub, and ruderal vegetation communities that are present. Food plants present in the project area include lupines, star-thistle (*Centaurea* spp.), milk thistle (*Silybum* spp.), vetches, blackberries, and willows.

Western Spadefoot

Western spadefoot toad primarily occurs in lowlands, inhabiting washes, floodplains of rivers, alluvial fans, playas, and alkali flats, and is found in the Central Valley and bordering foothills and Coast ranges south and north of San Francisco Bay. This species prefers areas of short grasses and open vegetation where the soil is sandy or gravelly and temporary pools occur. Other habitats used by western spadefoot include valley and foothill grasslands, open chaparral, and pine oak woodlands. The species is nocturnal and active during warm, wet periods and evenings when moisture levels are high. Diet varies from decaying plant organisms to small invertebrates and amphibian larvae.

Reproduction occurs from late winter to late March, when western spadefoot toads lay eggs in ponds and puddles, and the species spends the majority of the year in self–made burrows or the burrows of gophers, squirrels, or kangaroo rats.

Suitable habitat is present throughout the project area within areas of friable, sandy soils, particularly along the east and west riverbanks and among willow scrub and ruderal habitat on either side of the Sacramento River. Movement or disruption of soils in these areas could impact this species.

Northwestern Pond Turtle

The northwestern pond turtle is a habitat generalist and has been observed in slow-moving rivers and streams (e.g., in oxbows), lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants. They prefer aquatic habitat with refugia such as undercut banks and submerged vegetation and require emergent basking sites such as mud banks, rocks, logs, and root wads to thermoregulate. Pond turtles are omnivorous and feed on a variety of aquatic and terrestrial invertebrates, fish, amphibians, and aquatic plants.

Northwestern pond turtles regularly utilize upland terrestrial habitats, most often during the summer and winter, especially for oviposition (females), overwintering, seasonal terrestrial habitat use, and overland dispersal. Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils. Western pond turtles exhibit high site fidelity, returning in sequential years to the same sites to nest or overwinter. Females lay their clutch as early as late April in southern and central California to late July, although they predominantly lay in June and July. In northern California and Oregon, hatchlings remain in the nest after hatching and overwinter, emerging in the spring. In southern and central California, those that don’t overwinter emerge from the nest in the early fall.

At the project site, suitable aquatic habitat is present within the Sacramento River, especially in areas with slower moving water in backwater or side-channel pools. Suitable nesting habitat is present throughout all vegetation communities within 500 feet of the river’s edge. Disturbance to aquatic habitat and loss and disturbance of suitable upland basking and nesting habitat along the east and west riverbanks and among ruderal habitat on either side of the Sacramento River could impact this species.

Swainson's Hawk

Swainson's hawks are medium-sized with relatively long, pointed wings and a long, square tail and typically breed in California. Their diet is varied, with California vole being the staple in the Central Valley. Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. Valley oak, Fremont cottonwood, walnut, and large willow are the most commonly used nest trees in the Central Valley. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Unsuitable

foraging habitat includes crops such as vineyards, orchards, certain row crops, rice, corn, and cotton. Swainson's hawks return to the Central Valley by April 1 to occupy traditional nest territories or build new nests and lay eggs April 5 to 20, and fledging is completed by mid-July. Swainson's hawks are single-brooded with a clutch size of one to five eggs, an incubation period of 34 to 35 days, and a nestling period of 17 to 22 days.

Central Valley populations are centered in Sacramento, San Joaquin, and Yolo counties. The loss of agricultural lands to various residential and commercial developments is a serious threat to Swainson's hawk throughout California. Additional threats are habitat loss due to riverbank protection projects, conversion from agricultural crops that provide abundant foraging opportunities to crops such as vineyards and orchards that provide fewer foraging opportunities, shooting, pesticide poisoning of prey animals and hawks on wintering grounds, competition from other raptors, and human disturbance at nest sites.

Suitable nesting habitat for Swainson's hawk is present throughout the project area among the taller, mature trees and snags. Suitable foraging habitat is present throughout the project area, especially in open areas among the non-native annual grassland, valley oak woodland, and ruderal vegetation communities. No known Swainson's hawk nests occur in the project area, and the presence of a nesting bald eagle pair and nearby osprey nests may limit the probability of Swainson's hawk nesting in the immediate vicinity due to competitive exclusion.

Western Yellow-Billed Cuckoo

Western yellow-billed cuckoo inhabits low elevation, well-developed riparian vegetation communities primarily comprising cottonwoods (*Populus* spp.), willows, ash (*Fraxinus* spp.), sycamore (*Platanus* spp.), boxelder (*Acer* spp.), alder (*Alnus* spp.), and walnut (*Juglans* spp.) with a dense understory associated with riparian zones often with blackberry, nettle, or wild grape. Cottonwood trees often provide important foraging habitat where western yellow-billed cuckoos feed largely on insects. They are known to nest along the Sacramento River, typically among dense foliage in open woodlands, cottonwood and willow riparian forests, walnut and almond orchards, parks, and gardens. Breeding in California typically begins in mid-June, but can start as early as late May, and extends through mid-September.

The project area is located within critical habitat Unit 63, CA-1 along the Sacramento River in Glenn, Butte, and Tehama counties. It contains all of the physical or biological features (PBFs) essential to the conservation of the Western yellow-billed cuckoo relating to breeding and dispersing within the mixed riparian forest and willow scrub vegetation communities of the project site. These habitat features provide the necessary mix of riparian trees, complex understory, and hydrologic conditions to support breeding, foraging, and dispersal. The species was recently detected along the oxbow

immediately east of the Sacramento River south of the orchard on the east bank and adjacent to the project area.

White-Tailed Kite

White-tailed kites inhabit open grasslands and savannas and breed in a variety of habitats, including grasslands, savanna, cultivated fields, marshes, oak woodlands, and suburban areas where prey is abundant. Nests are built in trees typically near a water source and may occur in suburban areas with adjacent open areas with abundant prey. Breeding occurs between February and July, and the species can be double-brooded in some years. During the non-breeding season, white-tailed kites may roost communally. White-tailed kites prey on small mammals, reptiles, and occasionally, birds.

Suitable nesting trees are present among the mature trees and snags within the study area, and suitable foraging habitat is present throughout the study area, especially in open areas among the non-native annual grassland, valley oak woodland, and ruderal vegetation communities. No known white-tailed kite nests occur within the study area; however, white-tailed kites could nest or forage on the property at any time in the future.

Bald Eagle

Bald eagles inhabit forested areas adjacent to large bodies of water including lakes, reservoirs, rivers, estuaries, and the coastline. They are opportunistic and will feed on carrion but actively prey on a variety of fish, mammals, and birds. Breeding begins in early spring in the north, and the species is single-brooded. Nests are built from sticks and branches in a large tree or a rocky outcrop; bald eagles have also been known to nest on the ground on islands. Bald eagles winter in temperate areas typically below 500 meters in elevation. Roosts sites are often located in large conifers in the west near aquatic foraging areas.

Suitable nesting habitat is present throughout the project area among the taller, mature trees and snags. An active nest was observed within the mixed riparian forest in the project area during a May 2021 site visit and is presumably used annually because several bald eagles (juveniles and adults) are regularly observed foraging and perched within the project area. Suitable foraging habitat is present along the reach of Sacramento River within the project area.

Bank Swallow

Bank swallows nest in colonies in vertical banks with friable soils and breed from April to August, and they are colonial nesters in lowland riverbank habitats and coastal bluffs. Optimal habitat will provide sandy, vertical bluffs or riverbanks for constructing nest burrows to a depth of 18 to 36 inches (CDFW 1992). The quality of nesting sites is dependent upon soil moisture, texture, burrow orientation, and proximity to foraging areas. Seventy percent of the statewide population occurs along natural river banks of the Sacramento and Feather rivers in the Sacramento Valley, and smaller

populations have been observed in the Klamath Basin and Modoc County areas in northeastern California. Bank swallows begin courtship in Central California between March and mid-April, and eggs are laid as early as April 10. Hatching occurs after 21 days, and nestlings are fed insects until they emerge from the burrow about 21 days later and are able to feed themselves. In late August, young bank swallows embark on a 3-week migration and remain in Central and South America from September until March. Bank swallows may be double-brooded if the first clutch is lost (Baicich and Harrison 2005).

The west bank is characterized by vertical banks of varying heights and moderately steep slopes that extend down to the waterline. Soil substrate is composed of a mix of sandy loam with loosely embedded pebble, gravel, and cobble-sized rocks. The entire west bank within the study area exhibited evidence of recent and ongoing erosion, including fissures and sloughed soils at various locations along the length of the bank. The characteristics of the vertical bank varied by height, presence or absence of exposed roots, and degree of erosion. Near the confluence of the west bend in the Sacramento River and the bypass intake return, riprap lined the west bank for approximately 100 feet. North of the riprap, a grove of mature trees span the top of the bank extending northward near the area where the riprap ends and where spur dikes W-6 and W-7 are proposed to be installed. The bank in this area exhibits the tallest vertical banks, but the extensive root systems in this section may hinder burrow excavation by swallows. Bank swallows have not been observed nesting or exhibiting any interest in the banks in this area, based on multiple site visits from 2021 to present.

North of this section, near proposed spur dikes W-4 and W-5, the steep vertical banks show fewer exposed roots but clear evidence of ongoing erosion. Moving northward, the banks gradually decrease in height, transitioning to a top layer approximately 12 to 24 inches tall, with an increasing presence of embedded gravels. Bank fissures and sloughed soils indicate active collapse processes. Near the apex of the bend along the west bank, vertical bank height further diminishes, in some areas measuring only 12 inches. Beyond this point, a long stretch of the west bank continues northward (near proposed spur dike W-3) but lacks suitable nesting habitat for bank swallows due to the limited height of vertical exposures. Farther north, the remaining section of the west bank becomes fully vegetated, with trees and shrubs obscuring the exposed banks. Immediately south of the vegetated area, between proposed spur dikes W-1 and W-2, short vertical faces ranging from 24 to 40 inches in height were present and supported bank swallow nesting activity in 2022. However, recent erosion has substantially reduced the extent of suitable vertical bank in this location, now limited to a small area approximately 24 inches tall. Overall, vertical bank habitat along the west bank is currently unsuitable for bank swallow nesting.

On the east bank, a section with vertical banks, located at proposed spur dikes E-2 through E-6, was associated with previous bank swallow nesting. High water flows during the 2024/2025 wet season exceeded 120 kcfs, resulting in significant bank erosion within the area formerly occupied by bank

swallow nests. This area does not currently provide suitable nesting habitat, as evidenced by a site visit performed by Henry Lomeli, an authorized surveyor and participant in several bank swallow statewide population surveys (Lomeli 2025). The survey results are purported to be publicly available in September 2025.

Bank swallow nesting habitat is highly dynamic and closely tied to the natural flow patterns and sediment movement typical of alluvial river systems leading to temporal nest site suitability. Bank swallows have historically been observed nesting on both sides of the Sacramento River within the project footprint. Site visits conducted on April 29, 2021; May 5, 2021; June 24, 2022; and August 5, 2022; confirmed the presence of bank swallows within the study area. Bank swallows were observed nesting on the east bank in 2021, but not on the west bank, and on both the east and west banks in 2022. They have not been observed nesting in 2025 on either bank and, based on the preceding summaries, there is no current suitable nesting habitat on the west or east banks.

Oak Titmouse

The oak titmouse is primarily an oak obligate species, inhabiting oak woodlands, oak savannahs, piñon and juniper woodlands, and occasionally suburban areas with oaks, year-round throughout much of California. Nests are situated in natural or excavated cavities in trunks, primary and secondary branches, and stumps. Breeding begins in March.

Suitable nesting habitat is present throughout the project area, particularly among the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities of the project site. The oak titmouse was observed on site during the January 10, 2025, site reconnaissance and can be expected to nest, forage, and disperse year-round within the project area.

Bullock's Oriole

Bullock's oriole inhabits riparian and oak woodlands, farmlands, and orchards across western North America, preferring sycamores, cottonwoods, willows, and deciduous oaks but the species will also use live oaks, orchard trees, and some conifers. Bullock's oriole preys on a variety of insects including crickets, caterpillars, beetles, stinkbugs, leafhoppers, and spiders and feeds on a variety of fruits including berries, cherries, and figs. The species breeds in areas with well-spaced trees, often near rivers, streams, and orchards, beginning in late March through late July.

Suitable nesting habitat is present throughout the project area, particularly among the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities at the project site. Bullock's oriole can be expected to nest and forage from March through September within the project area.

Osprey

The osprey is almost exclusively piscivorous, inhabiting areas near lakes, rivers, estuaries, marshes, lagoons, mangroves, and coasts. It breeds throughout much of northern North America and south into Marin, Tehama, and Plumas counties in California, wintering along the California coast from southern Oregon to southern California and inland to the Cascades and western deserts in southern California. Osprey commonly build large, conspicuous stick nests in the tops of trees or rocky outcrop near prominent waterbodies. Breeding occurs from late March to early June.

Suitable osprey nesting habitat is present throughout the project area among the taller, mature trees and snags along the Sacramento River. No known osprey nests are present in the project area; however, ospreys have been observed soaring and foraging in the project area on several recent site visits. Suitable foraging habitat is present along the Sacramento River within and adjacent to the project area.

Nuttall's Woodpecker

Nuttall's woodpecker primarily inhabits riparian woodlands and oak woodlands in canyons and shaded areas, characterized especially by coast live and valley oaks, often mixed with willows and western sycamore. The species forages along the bark of trees for insects and will feed on acorns. The Nuttall's woodpecker is a cavity nester, building its nests in soft woods such as oaks, willows, cottonwoods, maple, alders, elderberry, snags, and on some occasions fence posts. Nuttall's woodpecker breeding begins in March.

Suitable nesting habitat for Nuttall's woodpecker is present throughout the project area, particularly among the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities of the project site. The species was observed on site during the January 10, 2025, site reconnaissance and can be expected to nest, forage, and disperse year-round within the project area.

Lawrence's Goldfinch

Lawrence's goldfinch breeds in a variety of habitats throughout its range, including blue oak savanna, chaparral, riparian woodland, desert oases, piñyon-juniper woodland, and mixed coniferous-oak forest. Components of nesting habitat typically include arid, open woodlands with adjacent chaparral or brushy areas; tall, weedy fields; and a nearby water source. Lawrence's goldfinch breeding begins in March.

Suitable nesting habitat for Lawrence's goldfinch is present throughout project area among the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities of the project site. Suitable foraging habitat is present throughout the entire project area.

Roosting Bats

Of the 25 known bat species in California, 12 are designated as California Species of Special Concern by CDFW. Bats are classified as non-game mammals by CDFW and are afforded protection under the California Fish and Game Code (CFGC; §86, §2000, §2014, §3007, and §4150). They also receive protection under CCR (Title 14, §251.1, Article 20; §15380; and §15382) and the California Public Resources Code (Division 13). In general, bats exhibit a wide range of habitat usage depending on the species, season, time of day, resource availability, and level of disturbance, among other factors, but often exhibit high site fidelity and roost selection specificity. Roost sites consist of maternity (nursery colonies), bachelor, day, night, and interfeeding sites within caves, mines, cliffs, rock crevices, tree hollows, stumps, foliage, exfoliating bark, and human-made structures such as buildings and bridges. Some species require a complex network of habitat characteristics that fulfill foraging, water intake, shelter, and thermoregulatory requirements that vary seasonally. Six roosting bat species with the potential to occur in the project area are described in the following paragraphs, and three of these species are designated as rare, sensitive, declining, special concern, high priority, or having limited or restricted distribution (hoary bat, pallid bat, and Townsend's western big-eared bat).

Pallid Bat. Pallid bat is a relatively large, light-colored bat that inhabits foothills and lowlands near water throughout California below 2,000 meters (6,560 feet) in elevation but is most abundant in arid deserts and grasslands, particularly in areas with rock outcrops near water. Pallid bats typically roost in small groups in a variety of habitat features, including bridges, buildings, tree hollows in coast redwoods, bole cavities in oaks, exfoliating bark, rock crevices in outcrops and cliffs, caves, and mines, as both day and night roosts. Roost sites may change seasonally and are typically reused for a few days to weeks. Pallid bats primarily feed on a variety of arthropods, typically capturing prey on the ground or gleaning from surfaces near the ground, and forage over shrub-steppe grasslands, oak savannah grasslands, open Ponderosa pine forests, talus slopes, gravel roads, orchards, and vineyards. Birthing varies with latitude but generally occurs from late-April to August; maternal colonies disperse by October. Overwintering is common along the California coast, but individuals may migrate short distances between winter and summer roosts.

Suitable roosting habitat for pallid bat is present among rock outcrops, crevices in the streambanks, tree hollows, bole cavities and exfoliating bark of dead trees, snags, stumps, and fallen logs within the project area. Suitable foraging habitat is present throughout the project area.

Silver-Haired Bat. The silver-haired bat is a medium-sized bat with characteristically silver-tipped hairs that inhabits conifer and mixed conifer forests of northern California, as well as woodlands and mixed woodlands adjacent to rivers, streams, lakes, and ponds. The species roosts in cavities, hollows, and exfoliating bark, and in foliage of large-diameter trees and snags near the tops of trees, but is also known to utilize rock crevices, buildings, mines, and caves. Maternity roosts occur almost exclusively in tree hollows and old bird cavities. Silver-haired bats forage in open areas such as

meadows, above the canopy and within riparian zones, and although this species are moth specialists, they will opportunistically prey on a variety of ground and airborne insects and arthropods. Fertilization occurs in early fall and is delayed until the following spring. Birthing occurs in June and July.

Suitable roosting and maternity habitat for silver-haired bat is present among tree hollows, bole cavities, and exfoliating bark of dead trees, snags, stumps, and fallen logs within the project area. Suitable foraging habitat is present throughout the project area.

Hoary Bat. Hoary bats are ubiquitous but uncommon throughout California and roost solitarily in the foliage in primarily evergreens such as pine (*Pinus* spp.), California redwood (*Sequoia sempervirens*), hemlock (*Tsuga* spp.), and spruce (*Picea* spp.) and secondarily in deciduous trees. They forage in small to large groups on large prey such as moths, beetles, crickets, and dragonflies. They emerge up to 5 hours after sunset to forage and employ a long-range foraging strategy using fast straight-line paths. They may remain at summer habitats and hibernate overwinter in lower latitudes but typically migrate to warmer climates in the winter. Hoary bats have delayed implantation, mating from late summer to early fall, and give birth the following June.

Suitable roosting habitat is present among the foliage of various trees throughout the project area including alder, valley oak, Oregon ash, willow, walnut, sycamore, and cottonwood trees. Suitable foraging habitat is present throughout the project area.

Western Red Bat. Western red bat is primarily a riparian obligate species that is ubiquitous throughout most of California. It is easily distinguished by its distinctive reddish coloration. Roosting typically occurs individually in dense clumps of tree foliage in riparian areas, especially in willows, cottonwoods, and sycamores, and within orchards and suburban areas in trees and shrubs. Roosts are often hidden from view and only accessible from below. Red bats are primarily moth specialists, but individuals will forage for a variety of other insects. This species migrates long distances but has been reported to overwinter in the Bay Area with interspersed winter foraging bouts on warm days.

Suitable roosting habitat for western red bat is present among the dense foliage of cottonwoods, willows, sycamores, ash, and alder trees within willow scrub and mixed riparian forest vegetation communities in the project area. Suitable foraging habitat is present throughout the project area.

Long-Eared Myotis. The long-eared myotis primarily inhabits coniferous areas and to a lesser extent, semi-arid shrublands, sage, chaparral, and agricultural areas. Roosts are located in tree cavities and under exfoliating bark in dead trees; however, pregnant females may use rock crevices, tree stumps, and fallen logs. Young are born in June; females form small nursery colonies. They forage for large prey such as beetles and moths by gleaning from foliage, rocks, and other substrate while hovering.

The project area lacks suitable primary habitat for long-eared myotis, but suitable secondary roosting habitat is present among the hollows, bole cavities, and exfoliating bark of dead trees, snags, stumps, and fallen logs in the project area. Suitable foraging habitat is present throughout the project area.

Yuma Myotis. Yuma myotis is a small bat that is ubiquitous throughout California. Typical habitat includes riparian corridors and edge habitat in forested canyons with strong association with permanent water sources, but also arid shrublands, deserts, and forests. They are colonial roosters and are typically found in human-made structures such as bridges or buildings but will also use caves, mines, and old cliff swallow nests. They also roost in a variety of habitats similar to pallid bat and forage on insects including midges, flies, caddis flies, and small beetles and moths above the water in riparian corridors and along the forest edge. Yuma myotis form maternity colonies of several thousand and give birth from April through July depending on latitude.

Suitable roosting habitat for Yuma myotis is present among rock outcrops, crevices in the streambanks, old swallow nests and tree hollows, bole cavities, and exfoliating bark of decedent trees, snags, stumps, and fallen logs within the study area. Suitable foraging habitat is present throughout the project area, particularly over and along the streambanks of the Sacramento River.

North American Porcupine

North American porcupine is a large, arboreal, slow-moving rodent native to North America. It is found in a variety of habitats in California, including coniferous forests, woodlands, chaparral, and sagebrush vegetation communities at varying elevations. Spending the majority of their time in the trees, porcupines also use dens (typically rock crevices) as refugia. They tend to spend more time in trees when understory cover is sparse. A generalist herbivore, it forages on forbs, grasses, berries, stems, bark, leaves, and needles but seasonally (fall and winter) requires cambium and conifer needles. Mating occurs in the fall/early winter, and birth to a single young occurs after 210 days gestation.

Suitable habitat for North American porcupine is present throughout the project area within the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities and along the Sacramento River. Suitable foraging habitat is present throughout the project area.

Central Valley DPS Steelhead

The Central Valley distinct population segment (DPS) steelhead includes all populations in the Sacramento and San Joaquin rivers and their tributaries. The current distribution ranges from Keswick Dam in the Upper Sacramento River to the Merced River in the San Joaquin River Basin, with distribution primarily limited by impassable dams. Anadromous adults make their upstream spawning migrations beginning in July (peaking in September and October) after residing in the Pacific Ocean for 2 to 3 years. Spawning occurs from December through April. Spawning, incubation, and most of the year-round rearing occurs farther upstream than the project area in the mainstem

Sacramento River and in coldwater tributaries. In the Sacramento River, juvenile steelhead generally migrate to the Pacific Ocean from late fall through early summer at age 1+. Although juvenile steelhead in the Sacramento River Basin may be found to migrate downstream most months of the year, the vast majority and peak emigration occurs in the spring with a smaller peak in the fall. Waters in the project area are within designated critical habitat for this species.

Central Valley DPS steelhead has potential to be seasonally present in the project area and may occur within the project area during the upstream migration of spawning adults and the downstream migration and transient rearing of juveniles. The project area does not contain suitable spawning habitat but provides a migration corridor for adults and juveniles and transient rearing habitat for emigrating juvenile steelhead, primarily during the fall through early summer months when favorable water temperatures occur. Central Valley DPS steelhead critical habitat encompasses the Sacramento River, including the project area, and San Joaquin River and their major tributaries.

Central Valley Spring-Run ESU Chinook Salmon

The Central Valley spring-run evolutionarily significant unit (ESU) Chinook salmon is one of four distinct runs of salmon that spawn in the Sacramento-San Joaquin River system. This species has potential to be seasonally present in the project area and may occur within the project area during the upstream migration of spawning adults and the downstream migration and transient rearing of juveniles. The project area does not contain suitable spawning habitat during Central Valley spring-run ESU salmon spawning season due to warm water temperature but provides a migration corridor for adults and juveniles and transient rearing habitat for emigrating juveniles, primarily during the winter through early summer months when favorable water temperatures occur. Based on past monitoring data and species migration behavior, juvenile Central Valley spring-run ESU salmon are highly unlikely to be present in the action area during the in-water construction window, with typical first occurrence as fry after late October. By the end of July, most of the Sacramento River spring Chinook salmon spawning run will have migrated farther upstream to natal tributary streams to find cooler oversummer water temperatures prior to spawning season, with a low number of potential migrants through August at the tail end of the spawning migration. Central Valley spring-run ESU Chinook salmon critical habitat encompasses the Sacramento River, including the project area, and several major regional tributaries, such as Mill, Deer, Antelope, Battle, and Clear creeks, all upstream of the project area. Critical habitat for the Central Valley spring-run ESU Chinook salmon includes all river reaches accessible in the Sacramento River and its tributaries in California; all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of the Bay (north of the San Francisco-Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. The project area occurs within an essential migratory corridor for Chinook salmon.

As stated previously, the project area is encompassed by critical habitat for Central Valley spring-run ESU Chinook salmon. Essential PBFs within riverine areas for Central Valley spring-run ESU Chinook salmon include the following: 1) freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development; 2) freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and movement; 3) water quality and forage supporting juvenile development with natural cover; and 4) freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover supporting juvenile and adult migration and survival.

Sacramento River Winter-Run ESU Chinook Salmon

The Sacramento River winter-run ESU Chinook salmon includes all populations of Sacramento River winter-run ESU Chinook salmon in the Sacramento River and its tributaries in California. This species has potential to be seasonally present in the project area and may occur within the project area during the upstream migration of spawning adults and the downstream migration and transient rearing of juveniles. The project area does not contain suitable spawning habitat during the Sacramento River winter-run ESU salmon spawning season due to warm water temperatures but provides a migration corridor for adults and juveniles and transient rearing habitat for emigrating juveniles, primarily during the fall through early summer months when favorable water temperatures occur. Based on past monitoring data and species migration behavior, the spawning run of Sacramento River winter-run Chinook salmon should be complete, and no adult winter-run salmon would be expected in the project area during the in-water work window (July 15 to October 31). Juvenile winter-run Chinook salmon have the potential to be present during the proposed in-water construction season as early fry emigrants based on seasonal passage timing at Red Bluff and Knights Landing. Winter-run Chinook salmon fry typically first occur at the GCID diversion site around mid-August, but their frequency and abundance increases when water temperatures generally begin to decline in approximately mid-September. Water temperatures greater than or equal to 66°F can affect physiological and ecological stressors on juvenile Sacramento River Chinook salmon. Juvenile downstream distribution from the upstream spawning and rearing grounds may be delayed until water temperatures in downstream reaches, including in the project area, fall to suitable levels. Sacramento River winter-run ESU Chinook salmon critical habitat encompasses the Sacramento River, including the project area, and several major upstream tributaries. Critical habitat for the Sacramento River winter-run ESU Chinook salmon includes the Sacramento River from Keswick Dam; Shasta County (RM 302) to Chipps Island (RM 0) at the westward margin of the Delta; all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of the Bay (north of the San Francisco-Oakland Bay Bridge) from San Pablo Bay to the

Golden Gate Bridge. The project area occurs within an essential migratory corridor for Chinook salmon.

As discussed previously, Sacramento River winter-run ESU Chinook salmon has potential to be seasonally present in the project area during the upstream migration of spawning adults and the downstream migration and transient rearing of juveniles. Additionally, the project area is encompassed by critical habitat for Sacramento River winter-run ESU Chinook salmon.

SDPS Green Sturgeon

Like salmon and steelhead, southern distinct population segment (SDPS) green sturgeon are anadromous, spawning in freshwater and rearing in the estuaries and Pacific Ocean until maturing and returning to the Sacramento River to spawn. This species has potential to be seasonally present in the project area. SDPS green sturgeon may occur within the project area during the upstream migration of spawning adults, returning downstream migration of spawned adults, and downstream migration and transient rearing of juveniles. The project area is primarily a migration corridor for adults and juveniles and transient rearing habitat for emigrating juveniles, primarily during winter and fall months due to the relatively shallow side channels around the mid-channel bar; however, it is not known, suitable spawning habitat. In California, critical habitat for the green sturgeon includes the Sacramento River, the Delta, and Suisun and San Pablo bays along with all of the Bay below the mean higher high water, including the project area.

The project area does not contain suitable spawning habitat for SDPS green sturgeon. Additionally, the project area is encompassed by critical habitat for SDPS green sturgeon.

3.3.4.1.5 Special-Status Plant Species

Queries of the California Natural Diversity Database (CNDDB) and Biogeographic Information and Observation System (BIOS) for the locations of known occurrences of special-status plants and sensitive natural communities were conducted for the vicinity of the proposed project (CNDDB 2025). Additionally, the Calflora online database was accessed for potential special-status plant species that could occur in the region (Calflora 2025). The vegetation types in the study area were compared to the habitat requirements described for rare plants in the vicinity of Montgomery Island and the Sacramento River to determine their potential for occurrence. The habitat requirements for each species were reviewed on CNDDB with supplemental information obtained from the text descriptions provided by Jepson eFlora (Jepson Flora Project 2025).

The following special-status plant species were identified as potentially occurring in the study area for the proposed project through the review of CNDDB (CDFW 2025), BIOS, and Calflora: Mexican mosquito fern (*Azola microphylla*), thread leaf beakseed (*Bulbostylis capillaris*), silky cryptantha (*Cryptantha crinita*), dwarf downingia (*Downingia pusilla*), shield-bracted monkey flower (*Erythanthe glaucescens*), Hoover's spurge (*Euphorbia hooveri*), hogwallow starfish (*Hesperevax caulescens*), woolly

rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*), and Ahart's paronychia (*Paronychia ahartii*). Additionally, a search of the U.S. Geological Survey (USGS) topographic quadrangle covering the project area and the six surrounding quadrangles identified 36 plant species considered rare, threatened, or endangered by the California Native Plant Society (CNPS; a California Rare Plant Rank 1 or 2 species) with recorded occurrences in the vicinity of the proposed project (CDFW 2025). Of the 36 California Rare Plant Rank 1 or 2 species with recorded observations in the vicinity of the project site, 7 species are state or federally listed threatened or endangered. These include Hoover's spurge, Boggs Lake hedge-hyssop (*Gratiola heterosepala*), hairy Orcutt grass (*Orcuttia pilosa*), slender Orcutt grass (*Orcuttia tenuis*), Greene's tuctoria (*Tuctoria greenei*), Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*), and Geysers panicum (*Panicum acuminatum* var. *thermale*). Due to the lack of suitable habitats in the project area (e.g., vernal pools), none of these state or federally listed plant species have the potential to occur within the project site.

The special-status plant species summarized in Table 10 and further detailed in Appendix B were identified as potentially occurring in the study area through the review of CNDDB, BIOS, and Calflora and general proximity of known occurrences to the project area.

Table 8
Special-Status Plant Species with Potential for Occurrence Within the Study Area

Notes:

Common Name	Scientific Name	California Rare Plant Rank
Mexican mosquito fern	*Azola microphylla*	4.2 https://map.dfg.ca.gov/rarefind/view/RF_FieldDescriptions.htm (limited distribution)
Thread leaf beakseed	*Bulbostylis capillaris*	4.2 (limited distribution)
Silky cryptantha	*Cryptantha crinita*	1B.2 (rare, threatened, or endangered in California and elsewhere)
Shield-bracted monkey flower	*Erythranthe glaucescens*	4.3 (limited distribution)
Woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	1B.2 (rare, threatened, or endangered in California and elsewhere)

Notes:
Rare Plant Rank 1B.2: rare, threatened, or endangered in California and elsewhere; fairly threatened in California (20% to 80% occurrences threatened/moderate degree and immediacy of threat)
Rare Plant Rank 4.2: watch list, plants of limited distribution; moderately threatened in California (20% to 80% occurrences threatened/moderate degree and immediacy of threat)
Rare Plant Rank 4.3: watch list, plants of limited distribution; not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)
Source: CDFW 2025.

Special-status plants and/or sensitive plant habitats were not identified or observed in or adjacent to the project area during rare plant surveys conducted in 2021 to 2022. Rare plants with the potential

to occur based on the presence of suitable habitat include woolly rose-mallow, shield bracted monkey flower, silky cryptantha, thread-leafed beakseed, and Mexican mosquito fern. Habitat for vernal pool endemic species was determined to be absent.

3.3.4.1.6 Migratory Bird Treaty Act Protected Birds and Raptors

Several species of birds protected by the Migratory Bird Treaty Act (MBTA) may occur in the project area. MBTA-protected birds could nest in fallow fields or barren areas within the project area and could also roost or nest in emergent wetland vegetation or mature trees located along the Sacramento River and its tributaries. MBTA-protected birds include, but are not limited to, the following (USFWS 2023):

- Barn swallow (*Hirundo rustica*)
- Bushtit (*Psaltriparus minimus*)
- Belted kingfisher (*Megaceryle alcyon*)
- House finch (*Haemorhous mexicanus*)
- Cliff swallow (*Petrochelidon pyrrhonota*)
- White-tailed kite
- American robin (*Turdus migratorius*)
- Swainson's hawk
- Common raven (*Corvus corax*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Lawrence's goldfinch
- Least Bell's vireo (*Vireo bellii pusillus*)
- Yellow headed blackbird (*Xanthocephalus xanthocephalus*)

MBTA-protected birds in this list that have been identified as having the potential to occur in the project area include: white-tailed kite, Swainson's hawk, and Lawrence's goldfinch.

3.3.4.1.7 Wildlife Movement Corridors

Wildlife movement corridors, also called dispersal corridors or landscape linkages, are linear features that function primarily by connecting at least two wildlife habitat areas (Beier and Loe 1992). These corridors increase connectivity between habitats that have become isolated by fragmentation, caused primarily by urbanization, agriculture, and forestry. They function by facilitating the movement of individuals through dispersal and migration to maintain gene flow and diversity between local populations. Other definitions of corridors and linkages are as follows:

- *A corridor is a specific route that is used for movement and migration of species. A corridor might be different from a "linkage" because it represents a smaller or narrower avenue for movement.*

- *A linkage is a habitat area that provides connectivity between habitat patches and year-round foraging, reproduction, and dispersal habitat for resident plants and animals. "Linkage" will mean an area of land that supports or contributes to the long-term movement of wildlife and genetic material.*

Wildlife corridors and linkages are important features in the landscape, and the viability and quality of a corridor or linkage depends on site-specific factors. Topography and vegetative cover are important factors for corridors and linkages. These factors should provide cover for both predator and prey species. These factors should direct animals to areas of contiguous open space or resources and away from humans and development. The corridor or linkage should be buffered from human encroachment and other disturbances (e.g., light, loud noises, and domestic animals) associated with developed areas that have caused habitat fragmentation (Schweiger et al. 2000). Wildlife corridors and linkages can function at various levels, depending on these factors and, for this reason, the most successful wildlife corridors and linkages will accommodate all or most of the necessary life requirements of predator and prey species.

Riparian vegetation on the banks and body of the Sacramento River provide movement corridors for a variety of resident wildlife species that occupy riverine habitat and agricultural lands, including many species of birds, reptiles, and amphibians. Perennial riparian and emergent wetland vegetation associated with the Sacramento River provides essential cover and foraging opportunities for smaller migratory bird species to travel. Some migratory passerines move east to west (and west to east) across the project area, whereas other species move north to south, resting and foraging in the project area. The project area is within the Pacific Flyway, an established air route of waterfowl and other birds migrating between wintering grounds in Central and South America and nesting grounds in Pacific Coast states and provinces. Locally common reptiles (e.g., snakes and lizards) move shorter distances along the dry ground at the toe of the riverbank and on slopes. Amphibians move through the aquatic corridors.

3.3.4.2 Applicable Regulations

3.3.4.2.1 Federal

Federal Endangered Species Act. Under the FESA, the Secretary of the Interior and the Secretary of Commerce have the joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and determine whether the proposed project may affect or "take" such species. Per the FESA, take means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 USC 1532[19]). Section 7 of the FESA requires USACE to consult with USFWS and/or NMFS to determine whether the proposed

project is likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat or habitat proposed to be designated for such species (16 USC 1536[a][3]). USACE is consulting with USFWS and NMFS under Section 7 of the FESA for the proposed project.

Migratory Bird Treaty Act. The MBTA of 1918 (16 USC 703–712) is the primary legislation in the United States to conserve migratory birds. It implements the United States' commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The MBTA prohibits the taking, killing, trading, or possessing of migratory birds. This includes disturbance that causes nest abandonment or loss of reproductive effort (e.g., killing or abandonment of eggs or young).

Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act (16 USC 668-668d), enacted in 1940 and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle [...] [or any golden eagle], alive or dead, or any part (including feathers), nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.6). In addition to immediate impacts, this definition also covers effects that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson–Stevens Fishery Conservation and Management Act (MSA) is the primary law that governs marine fisheries management in U.S. federal waters and was enacted to maintain healthy populations of commercially important fish species. Under the MSA, the eight regional fishery management councils are responsible for developing fishery management plans (FMPs) to manage these species. The 1996 provisions to the MSA included protecting the habitats of species for which there is an FMP; these habitats are designated as Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. EFH can consist of both the water column and the underlying surface (e.g., seafloor) of a particular area, and it includes those

habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions.

The Pacific Coast Salmon FMP includes Chinook salmon and coho salmon and occasionally includes pink salmon (*O. gorbuscha*), sockeye salmon (*O. nerka*), and chum salmon (*O. keta*). The proposed project is within the EFH for the Pacific Coast Salmon FMP.

3.3.4.2.2 State

California Endangered Species Act. Under the CESA, CDFW is responsible for maintaining a list of threatened, endangered, and candidate species (CFGC 2070). CDFW also designates "fully protected" or "protected" species as those that may not be taken or possessed. Species designated as fully protected or protected may or may not be listed as endangered or threatened. CDFW also tracks species of special concern, which are animal species whose populations have diminished and may be considered for listing if declines continue. Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project would have a potentially significant impact on such species. "Take" of a species, under the CESA, means to "hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill" (CFGC 86). The CESA definition of "take" does not include "harm" or "harass," as is included in the FESA. As a result, the threshold for a take under the CESA may be higher than under FESA because take is not defined to include habitat modification under the CESA. CDFW may issue incidental take permits when adequate minimization measures are met and issuance of the permit would not jeopardize the continued existence of a state-listed species. Should the project applicant receive authorization to take federally listed species under FESA, take authorization may also be sought as a "consistency determination" from CDFW under CFGC 2080.1.

California Native Plant Protection Act. The CNPS (CFGC 1900–1913), Natural Communities Conservation Planning Act, and CESA provide guidance on the preservation of plant resources. Vascular plants listed as rare or endangered by the CNPS, but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- **Rank 1A:** Plants presumed to be extirpated in California and either rare or extinct elsewhere
- **Rank 1B:** Plants that are rare, threatened, or endangered in California and elsewhere
- **Rank 2A:** Plants presumed to be extirpated in California, but more common elsewhere
- **Rank 2B:** Plants that are rare, threatened, or endangered in California, but more common elsewhere
- **Rank 3:** Plants about which more information is needed (a review list)
- **Rank 4:** Plants of limited distribution (a watch list)

In general, plants with California Rare Plant Ranks (CRPRs) 1A, 1B, 2A, or 2B also meet the definition of CFGC 1901, Chapter 10 of the Native Plant Protection Act, and CFGC 2062 and 2067.

California Fish and Game Codes 1580, 3503, 3511, 3513, 4700, 5050, and 5515. Provisions of the MBTA are adopted through the CFGC. Under CFGC 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or related regulations. CFGC 3513 prohibits take or possession of any designated migratory non-game bird or any part of such migratory non-game bird. The state code offers no mechanism for obtaining an incidental take permit for the loss of non-game migratory birds.

The CFGC strictly prohibits the incidental or deliberate take of fully protected species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock; therefore, avoidance measures may be required to avoid a take (CFGC 3511 for birds, 4700 for mammals, 5050 for reptiles and amphibians, and 5515 for fish).

California Fish and Game Code Section 1600–1616. Provisions state that an entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake without providing notification to CDFW. This notification may result in a Streambed Alteration Agreement between the project applicant and CDFW. Activities in intermittent streams and canals may require Streambed Alteration Agreements. The proposed project would be required to obtain a Streambed Alteration Agreement from the CDFW.

Senate Bill 1334 – The Oak Woodlands Conservation Act. Senate Bill (SB) 1334 is an act to add §21083.4 to the PRC, which requires each county in California to implement an oak woodland protection policy to mitigate for the loss of oak woodlands resultant from approved projects within their jurisdiction. In this policy, oak trees are defined as all native species of oaks larger than five inches diameter at breast height (DBH; or 4.5 feet above grade). At least one of four mitigation alternatives for significant conversions of oak woodlands is required in this regulation: 1) conserve oak woodlands through the use of a conservation easement; 2) plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees (planting maintenance must last for 7 years, and mitigation plantings will not fulfill more than one-half the mitigation requirement for the project; this alternative may also be used to restore former oak woodlands); 3) contribute funds to the Oak Woodlands Conservation Fund, as established under §1363 (a) of the CFGC; and 4) other mitigation measures developed by each county.

3.3.4.2.3 Local

Tehama County General Plan. The following local policies and measures pertaining to biological resources are included in the Open Space Element of the *Tehama County General Plan* (Tehama County 2009):

- ***Policy OS-3.1:*** *The County will preserve and protect environmentally-sensitive and significant lands and water valuable for their plant and wildlife habitat, natural appearance, and character.*
- ***Policy OS-3.2:*** *The County will protect areas identified by the California Department of Fish and Game and the California Natural Diversity Data Base as critical riparian zones.*
- ***Policy OS-3.4:*** *The County will endeavor to provide for wildlife circulation in and around new development projects, major transportation facilities, roads, railroads, and canals.*
- ***Policy OS-3.7:*** *The County will promote best management practices of natural resources that will enhance wildlife habitat.*
- ***Implementation Measure OS-3.7a:*** *Water diversions/dams constructed along anadromous fish streams will be designed to protect fish populations and to ensure adequate flow levels for spawning activity during migratory seasons in accordance with State and Federal regulations.*

Glenn County General Plan. The following local policies or actions pertaining to biological resources are included in the Agricultural, Conservation and Sustainability, and Community Services and Facilities elements of the *Glenn County General Plan* (Glenn County 2023):

- ***Policy AG 5-11:*** *Promote wildlife-friendly farm practices, such as tailwater ponds, native species/grassland restoration in field margins, hedgerows, ditch management for riparian habitat, and restoration of riparian areas in a manner consistent with ongoing agricultural activities, water delivery systems, responsible use of pesticides, and other appropriate measures.*
- ***Policy COS 3-1:*** *Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Shasta Creek.*
- ***Policy COS 3-4:*** *Coordinate with State and Federal agencies, private landowners and preservation and conservation groups in habitat preservation and protection of rare, endangered, threatened, and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.*
- ***Policy COS 3-5:*** *Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, the migratory deer herd areas, naturally occurring wetlands, and stream courses such as Shasta and Stony Creeks as areas of significant biological importance.*
- ***Policy COS 3-6:*** *Direct development away from naturally occurring wetlands and other areas of sensitive and critical habitat throughout the County Planning Area.*
- ***Policy COS 3-7:*** *Preserve and enhance biological communities that contribute to the region's biodiversity including, but not limited to, grasslands, freshwater marshes, wetlands, vernal pools, riparian areas, aquatic habitat, oak woodlands, and agricultural lands.*

- ***Policy COS 3-9:*** *Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.*
- ***Policy COS 3-10:*** *Discourage the removal of large, mature, native trees that provide wildlife habitat, visual screening, or contribute to the visual and biological quality of the environment.*
- ***Action COS-3b:*** *Review development project proposals, infrastructure projects, long-range projects, and other projects that may potentially impact special-status species and sensitive resources to determine whether significant adverse impacts will occur. Where adverse impacts are identified, develop appropriate mitigation measures, in conformance with the General Plan policies and relevant State and Federal laws, to reduce or avoid the impacts to the greatest extent feasible.*
- ***Action COS-3c:*** *Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project will include appropriate mitigation measures identified by a qualified biologist, which may include, but are not limited to the following:*
    a. *Pre-construction surveys for species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, will be conducted by a qualified biologist;*
    b. *Construction barrier fencing will be installed around sensitive resources and areas identified for avoidance or protection; and*
    c. *Employees working on the project site will be trained by a qualified biologist to identify and avoid protected species and habitat.*
- ***Action COS-3d:*** *Make available a list of plants and trees native to the region that are suitable for use in landscaping, consistent with the requirements of California's Model Water Efficient Landscape Ordinance. The plant and tree species should be drought tolerant, and consideration should be given to the suitability of the plant and tree species for use as habitat to native animals, birds and insects.*
- ***Action COS-6g:*** *Coordinate with the California Department of Fish and Wildlife to identify adversely impacted aquatic habitat within the County and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to rivers, lakes, reservoirs, and streams.*
- ***Policy CSF 3-5:*** *Where feasible, developments should avoid excessive grading and disturbance of vegetation and soils, retain native vegetation and trees, and maintain natural drainage patterns to the greatest extent feasible.*

Butte County General Plan. The following local goals and policies pertaining to biological resources are included in the Conservation and Open Space Element of the *Butte County General Plan 2040* (Butte County 2023a):

- ***Goal COS-7:*** *Conserve and enhance habitat for protected species and sensitive biological communities.*

- ***Policy COS-P7.3:*** *Creeks will be maintained in their natural state whenever possible, and creeks and floodways will be allowed to function as natural flood protection features during storms.*
- ***Policy COS-P7.7:*** *Construction barrier fencing will be installed around sensitive resources on or adjacent to construction sites. Fencing will be installed prior to construction activities and maintained throughout the construction period.*
- ***Policy COS-P7.8:*** *Where sensitive on-site biological resources have been identified, construction employees operating equipment or engaged in any development-associated activities involving vegetation removal or ground disturbing activities in sensitive resource areas will be trained by a qualified biologist and/or botanist who will provide information on the on-site biological resources (sensitive natural communities, special-status plant and wildlife habitats, nests of special-status birds, etc.), avoidance of invasive plant introduction and spread, and the penalties for not complying with biological mitigation requirements and other State and federal regulations.*
- ***Policy COS-P7.9:*** *A biologist will be retained to conduct construction monitoring in and adjacent to all habitats for protected species when construction is taking place near such habitat areas.*
- ***Goal COS-9:*** *Protect identified special-status plant and animal species.*

Butte County Regional Conservation Plan. A joint Habitat Conservation Plan/Natural Community Conservation Plan between Butte County, City of Biggs, City of Chico, City of Gridley, City of Oroville, CDFW, USFWS, and NMFS, the *Butte Regional Conservation Plan* (BRCP) was adopted in 2007 and includes the project site (Butte County Association of Governments 2007). It is a comprehensive, countywide plan that streamlines the environmental permitting process and includes water and irrigation district projects and canal maintenance activities as Covered Activities. The BRCP includes coverage for more than 40 species of plants, fish, and wildlife within the project area, including Swainson's hawk, bald eagle, bank swallow, Chinook salmon, green sturgeon, VELB, western pond turtle, western spadefoot, white-tailed kite, western yellow-billed cuckoo, and others.

3.3.4.3 Impact Evaluation

BIO-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less-Than-Significant Impact After Mitigation. The proposed project would result in the permanent reduction of nesting, foraging, and rearing habitat for terrestrial species in the project area. Temporary impacts to riparian and grassland habitats would occur on the east and west banks during project construction. As such, the proposed project would result in potentially significant impacts to the FESA-listed VELB, western spadefoot, northwestern pond turtle, and western yellow-

billed cuckoo. Four State-listed or Fully Protected species, Crotch's bumble bee, Swainson's hawk, white-tailed kite, and bank swallow, have the potential to occur in the project area and are protected under the CESA or CFGC. The proposed project would result in potentially significant impacts to Crotch's bumble bee and white-tailed kite. The project area does not currently provide suitable nesting habitat for bank swallow, and nesting of Swainson's hawk is expected to be limited by the presence of bald eagle and osprey nests.

The proposed project, as designed, could cause significant impacts to FESA-listed fish species or designated critical habitat. The proposed project is designed to stabilize bank erosion and restore hydraulic conditions in the project area to better conform to the original design criteria for the GCID Fish Passage Improvement Project and to ensure the highest possible survival for juvenile salmon passing the GCID diversion. It would improve hydraulic conditions at the GCID fish bypass return channel outlet on the Sacramento River and reduce the risk of a river channel avulsion and migration of the river channel away from the fish bypass outlet. Riverbed and riverbank excavations for installation of spur dikes and rock slope protection on the east and west banks of the river would create a temporary disturbance during construction, which could significantly impact listed species that may be present in the project area.

Project-related impacts to special-status plant species, including silky cryptantha, woolly rose-mallow, thread-leaf beakseed, shield-bracted monkey flower, and Mexican mosquito fern could be significant if these species have established in the three years since the last rare plant survey depending on the population size, whether the occurrence would be at the periphery of the species' range, and if the population would be of local significance.

Special-Status Wildlife Species

Insects. The proposed project may result in indirect impacts through the temporary loss of food plants for bumble bee species. However, many of the food plants are disturbance tolerant and could easily repopulate, and the partial removal of these plants combined with the abundance of similar food plants in the local vicinity would not appreciably diminish the overall habitat value of the project area for bumble bee species. Direct impacts to Crotch's bumble bees (i.e., injury and mortality) may occur from ground disturbance resulting in the loss of subterranean nest sites within the project footprint if present. Impacts to Crotch bumble bees would be potentially significant.

Based on surveys conducted on January 10, 2025, exit holes were present on numerous older blue elderberry shrubs observed among the mixed riparian forest and ruderal vegetation communities west of the Sacramento River, suggesting the presence of VELB. Therefore, the proposed project may result in direct impacts (e.g., injury and mortality) to adult and larval VELB individuals if occupied elderberry shrubs are removed or trimmed during project construction activities. Indirect impacts (i.e., temporary or permanent loss of unoccupied blue elderberry plants) may occur if unoccupied

blue elderberry shrubs are removed or trimmed during project construction activities. Impacts to VELB would be potentially significant.

The proposed project would result in permanent and temporary loss of and disturbance to suitable sandy soil habitat of the Antioch Dunes anthicid beetle and the Sacramento anthicid beetle along the east and west riverbanks and in ruderal habitat on either side of the Sacramento River during project construction. Therefore, potentially significant direct and indirect impacts (e.g., injury, mortality, avoidance of habitat, or displacement) to Antioch Dunes anthicid beetle and Sacramento anthicid beetle individual adults, larvae, and eggs (depending on construction timing) may occur. However, the proposed project as designed would help to stabilize sandy features along the east and west riverbanks, thereby providing long-term benefits to the Antioch Dunes anthicid beetle and Sacramento anthicid beetle.

Amphibians. The proposed project would result in permanent and temporary loss and disturbance to suitable habitat for western spadefoot toad along the east and west riverbanks and in willow scrub and ruderal habitat on either side of the Sacramento River during project construction. Therefore, direct and indirect impacts (i.e., injury, mortality, avoidance of habitat, displacement, etc.) to individual adults and subadults may occur. However, the proposed project as designed would help to stabilize sandy features along the east and west riverbanks, thereby providing long-term benefits to the species. Impacts to western spadefoot toad would be potentially significant.

Reptiles. The proposed project would result in temporary disturbance to aquatic habitat for northwestern pond turtle during the construction phase and the permanent and temporary loss and disturbance to suitable upland basking and nesting habitat along the east and west riverbanks and in ruderal habitat on either side of the Sacramento River during project construction. Therefore, direct and indirect impacts (e.g., injury, mortality, avoidance of habitat, or displacement) to individual adults, juveniles, and/or hatchlings may occur. Direct impacts to eggs could occur if nests are established within the project footprint during construction. Impacts to northwestern pond turtle would be significant. Despite potential significant impacts, the proposed project as designed would help to stabilize sandy features along the east and west riverbanks, thereby providing long-term benefits to the species.

Birds. No known Swainson's hawk nests occur in the project area, and the presence of a nesting bald eagle pair and nearby osprey nests may limit the probability of Swainson's hawk nesting in the immediate vicinity by competitive exclusion. Therefore, the proposed project would not result in the loss of known Swainson's hawk nests but may temporarily discourage nesting and foraging in the project area during construction. No long-term direct or indirect impacts to Swainson's hawk nesting or foraging habitat are expected. The proposed project would result in less-than-significant impacts to Swainson's hawk.

The project area is located within USFWS-designated critical habitat for the western yellow-billed cuckoo. The project area contains PBFs essential to the conservation of western yellow-billed cuckoo relating to breeding and dispersing, including riparian woodlands within floodplains or upland areas, adequate prey base, and hydrologic processes. This species was also recently observed foraging but not nesting in the project area. Willow scrub habitat and small isolated areas of mixed riparian forest may be disturbed or altered by the proposed project, resulting in minor habitat loss for this species. However, given the small footprint of the project impacts and the extent of willow scrub and mixed riparian forest north and south of the project area, impacts to the western yellow-billed cuckoo and the temporary and permanent loss of nesting, foraging, and dispersal habitat would be less than significant. If western yellow-billed cuckoos establish nests within 300 feet of the project footprint prior to the commencement of construction activities, the proposed project may result in significant direct impacts (e.g., nest disturbance or abandonment during incubation, nestling, or fledging stages) and/or significant indirect impacts (e.g., modified foraging patterns or territories, noise or light pollution, or winter roost abandonment) to western yellow-billed cuckoo.

White-tailed kite has not been observed nesting in the project area. If white-tailed kite nests were established within the project area prior to or during construction, the proposed project may result in significant direct impacts (e.g., nest disturbance or abandonment during incubation, nestling or fledging stages) and/or significant indirect impacts (e.g., modified foraging patterns or territories, noise or light pollution, or roost abandonment) to white-tailed kite.

The proposed project would not result in the loss of known bald eagle nests, but project activities could directly impact an active nest due to its proximity to the proposed active construction footprint, resulting in heightened vigilance, stress, and altered nest-tending behaviors. Construction activities may also indirectly impact resident bald eagles through the temporary modification of foraging patterns or territories, alteration of normal behaviors, or roost abandonment. Although these impacts would be temporary and confined to the construction phase of the project, they are considered potentially significant.

Based on the 2024/2025 extreme high winter flows and resulting bank erosion along the northern portion of the east and west streambanks, these areas no longer provide suitable bank swallow nesting habitat. Therefore, no significant direct impacts (e.g., injury or mortality to adults, young or eggs, and/or nest disturbance or abandonment during incubation, nestling, or fledging stages) or indirect impacts (e.g., temporarily modified foraging patterns or territories or avoidance of suitable nesting or foraging habitat) are expected. Impacts to bank swallows would be less than significant.

The proposed project would not result in the loss of known nests of oak titmouse, Bullock's oriole, osprey, Nuttall's woodpecker, or Lawrence's goldfinch because none were actively observed in the project area. However, if these species were to establish nests within the project area prior to or during construction, the proposed project could result in potentially significant direct impacts

(e.g., nest disturbance or abandonment during incubation, nestling, or fledging stages) and/or indirect impacts (e.g., modified foraging patterns or territories, noise or light pollution, or winter roost abandonment) to the these bird species.

Mammals. Roosting bats are afforded special protection in California. Some bat species may forage on the project site but roost outside the project area if there is a lack of suitable roosting habitat on site. The proposed project could temporarily impact the availability and quality of roosting bat foraging habitat, but given the nocturnal foraging nature of bats, this is expected to be a less-than-significant impact. Additionally, construction-related activities and vegetation clearing and grubbing may result in significant impacts to three bat species that are also designated as rare, sensitive, declining, special concern, high priority, or having limited or restricted distribution: hoary bat, pallid bat, and Townsend's western big-eared bat. Construction-related activities and vegetation clearing and grubbing may result in significant direct impacts to individual roosting bats (e.g., mortality, injury or loss of roosting habitat due to rock removal, swallow nest destruction, and the removal or disturbance to decedent trees with hollows, bole cavities and exfoliating bark, snags, stumps, and fallen logs) and/or significant indirect impacts (e.g., temporary loss of habitat, roost site avoidance, shift in foraging behaviors, or noise or light pollution).

The proposed project may result in significant impacts (i.e., injury or mortality) to individual North American porcupines if present within the project area during construction. The proposed project may result in significant indirect impacts resulting from the loss of potential food plants due to clearing and grubbing of trees and understory vegetation. Construction activities may result in increased stress, temporary avoidance of habitat and loss of established territory, shift in foraging behaviors, and increased risk of predation.

Special-Status Fish Species and Essential Fish Habitat

Central Valley DPS steelhead, Central Valley spring-run ESU Chinook salmon, and Sacramento River winter-run ESU Chinook salmon migrate through the project area to reach upstream spawning grounds in the upper Sacramento River watershed. Migrating adult anadromous salmonids may be present in the project area throughout the year, with peak migrating abundances in the winter, late spring, and early summer and fall months, respectively. SDPS green sturgeon also have the potential to be present within the project area during construction activities. Although the proposed project would provide long-term, functional benefits to these fish species, construction of the proposed project would have a potentially significant impact on FESA-listed fish species.

Designated critical habitat for Central Valley DPS steelhead, Central Valley spring-run ESU Chinook salmon, Sacramento River winter-run ESU Chinook salmon, and SDPS green sturgeon occurs within the project area. Permanent and temporary modifications to critical habitat for these species resulting from the proposed project would include permanent and temporary addition of fills to the

riverbed and riverbanks and removal of riparian vegetation; however, temporary fill would be removed from the river with grade restoration, and riparian banks and vegetation would be restored and replanted. Rock fill volumes for spur dikes and riprap in the river channel would be compensated for by increased mobilization of sediment deposits and reduction in the size of and adverse hydraulic influence of the mid-channel bar on proper function of the fish screen and bypass system in the action area. Although the proposed project would cause temporary impacts to physical habitat and water quality that could potentially significantly impact fish during construction, in the long term it would provide functional benefits.

EFH for Pacific salmon occurs within the project area and is subject to the Pacific Coast Salmon FMP. The proposed project is expected to temporarily impact EFH for Pacific salmon. Permanent fill in the active river channel for the spur dikes, west bank riprap, and scour hole fill would permanently impact riverine habitat. Most of this would occur in fast water habitat types of riffles, runs, and glides. Over time, it is expected that the mid-channel bar would remain a dynamic fluvial sediment feature but gradually reduce in its size and hydraulic effect in the project area, compensating for the filled areas, and to better conform to the original design criteria for the GCID Fish Passage Improvement Project. In the near term (1 to 5 years), the spur dikes would create a scalloped bank line, which would deposit sediments annually between the dikes and evolve through establishment of vegetation, creating a seminatural, functioning riparian vegetated bank line. During the initial years (1 to 3 years) the scalloped bank line could provide habitat favored by fish predators like striped bass and Sacramento pikeminnow.

For Pacific salmon, direct construction impacts to Chinook salmon could be potentially significant. As for Sacramento River winter-run ESU and Central Valley spring-run ESU Chinook salmon critical habitat, there would be temporary water quality and substrate impacts associated with installing and removing coffer dams, turbidity curtains, and the temporary land bridge to the mid-channel bar. While these features are in place, temporary fill within the river would locally reduce inundated riverbed area, but fish passage would not be blocked by spur dike or riprap construction activities and would be maintained through the temporary land bridge by installation of culverts. The banks of the river would also be temporarily impacted to construct or enhance access roads, access ramps, and the temporary land bridge. All impacted bank areas and the riverbed at temporary features like coffer dams, turbidity curtains, and land bridge access road would be fully restored to pre-project grades and conditions after construction is complete. Removal of limited upland vegetation on Montgomery Island would be required, but tree and shrub replanting would occur as described, offsetting any associated permanent impacts to shaded riparian aquatic habitat components of critical habitat. Although impacts would be temporary in nature and mostly resulting from construction activities, they could be significant.

Special Status Plant Species

Special status plant species were not detected during the focused rare plant surveys conducted on April 30 and August 17, 2021 and March 28, 2022 during the blooming period for species with potential for occurrence in the project area. The results of these surveys are summarized as follows.

Special-status plants and/or sensitive habitats were not identified in or adjacent to the project area. Vernal pools, which support some of the listed plants identified in the region, are not present in the project area. Although existing habitat was present for a few species in the project area, none of the target plants were observed during the surveys. The active channel and the backwaters located south of the sand bar did not support Mexican mosquito fern or wooly rose-mallow; both species are known to occur in areas with slower-moving water. The eastern sandbar below the OHWM with sparsely vegetated silts, sands, and rock and the associated riparian habitat did not support thread leaf beakseed, silky cryptantha, or shield-bracted monkey flower. Thread leaf beakseed is known primarily from the western slope of the Sierra Nevada, and although the sandbar of the east bank is observed to have periodically open sands and dry sandy-gravelly soils, this species was not found. Shield-bracted monkey flower is known to occur from seeps along western foothills of the Sierra Nevada, east and northeast of Chico, and the project area lacks this specific microhabitat. Silky cryptantha is known to occur from a lesser tributary to the Sacramento River north of Red Bluff, where scouring flows are less dramatic than on the Sacramento River and habitat exists that could support this species.

The Sacramento River exhibits high fluctuation with scouring flows which generally move all but the most tenacious of plant species in the riparian system. The chance of a false negative survey is low for Mexican mosquito fern and wooly rose-mallow, but they could establish under some conditions. The absence of thread leaf beakseed, silky cryptantha, and shield-bracted monkey flower was not unexpected due to their occurrence to the east of the site within habitats outside of the Sacramento River flood channel. There is a low potential that these species could establish within the project area.

Drought conditions were recorded during the rare plant surveys in 2021 and 2022, which could have affected the growth of special-status plant species. Special-status plant species could have established in the project area in the three years since the last rare plant survey. As described previously, suitable habitat for thread-leaf beakseed, silky crypthantha, and shield-bracted monkey flower occurs within the project area, although these species have a low potential for occurrence because the area is generally too dynamic to support suitable microhabitats.

Areas with slow moving water could support the establishment of Mexican mosquito fern or wooly rose-mallow. The vegetation along the Sacramento River continues to be influenced by the perennial water and scouring flows during the storm season. The presence of water along the low flow channel

could allow for the germination and growth of special-status species dependent on aquatic habitat like Mexican mosquito fern and wooly rose-mallow. However, there is a low probability that these special-status plant species could establish in the project area.

Thread-leaf beakseed, shield-bracted monkey flower, and Mexican mosquito fern are relatively low sensitivity species (CRPR 4.2 and 4.3). Impacts to these species are unlikely and would not be considered significant if present unless population sizes were substantial or the occurrence would be at the periphery of the species' range or is of local significance. Impacts to silky cryptantha and woolly rose-mallow may be considered significant, if present, due to their higher-sensitivity species (CRPR 1B.2), which meets the CESA definitions of threatened and endangered species and is eligible for state listing.

Mitigation: Mitigation measures MM-BIO-1 through MM-BIO-9 and MM-BIO-11 through MM-BIO-23 would be implemented to reduce the potential significant impacts to biological resources. Although impacts would be less than significant for bank swallow and mitigation is not required, mitigation measure MM-BIO-11 would be implemented to further reduce potential impacts.

MM-BIO-1: Implement a Worker Environmental Awareness Training Program

A Worker Environmental Awareness Training program will be conducted for all on-site construction contractors and subcontractors. The training will be conducted prior to starting work on the proposed project and upon the arrival of any new worker. The training will include a brief review of locations of sensitive areas, possible fines for violations, avoidance measures, and correction actions should sensitive species be encountered. The program will cover the Avoidance and Minimization Measures, environmental permits, and regulatory compliance requirements. A record of all personnel trained during construction will be maintained for compliance verification.

MM-BIO-2: Designate Environmentally Sensitive Areas

Prior to the start of construction, Environmentally Sensitive Areas (ESAs)—defined as areas containing sensitive habitats adjacent to or within construction work areas where physical disturbance is not allowed— will be clearly delineated using high-visibility orange safety fencing. Construction work areas include the active construction site and all vehicle parking and staging areas. A qualified biologist will determine where ESA fencing is to be installed. The ESA fencing will remain in place throughout the duration of construction activities, and be regularly inspected and fully maintained at all times. The final project plans will depict all locations where ESA fencing is to be installed and provide installation specifications.

MM-BIO-3: Conduct On-Site Biological Monitoring

The qualified biologist will be present on site to monitor all ground disturbance and in-water work activities. The qualified biologist will have the authority to halt construction if or when a special-status species is observed within the project footprint or if a non-compliance issue is detected.

MM-BIO-4: Implement Construction Site Management Practices

The following site restrictions will be implemented:

- *All construction activities will occur within the designated project footprint.*
- *A speed limit of 15 miles per hour (mph) in the project footprint in unpaved areas will be enforced to reduce dust and excessive soil disturbance.*
- *Construction access, staging, storage, and parking areas will be located outside of any designated ESA or in areas environmentally cleared by the contractor. Access routes and the number and size of staging and work areas will be limited to the minimum necessary to construct the proposed project. Routes and boundaries of roadwork will be clearly marked prior to initiating construction or grading.*
- *All food and food-related trash items will be enclosed in sealed trash containers daily and properly disposed of off-site.*
- *No pets from project personnel will be allowed anywhere in the project area during construction.*
- *All equipment will be properly maintained and free of leak. Servicing of vehicles and construction equipment including fueling, cleaning, and maintenance will occur at least 50 feet from any hydrologic features unless it is an existing gas station.*

MM-BIO-5: Use Wildlife-Protective Erosion Control Devices

No plastic, synthetic monofilament, or tight-woven netting will be used for erosion control (ex. straw wattles, erosion control matting) to prevent wildlife from becoming entangled, trapped, or injured. Only natural fibers such as jute, coconut, twine, or other similar fibers will be used and wider mesh netting or fabrics are preferred.

MM-BIO-6: Conduct Preconstruction Surveys for Food Plants that Support Crotch's Bumble Bee and Western Bumble Bee, Minimize Habitat Disturbance, and Compensate for Loss of Habitat

*During project construction activities, to the extent feasible, efforts will be made to minimize habitat loss in areas known to support host/food plants for Crotch's bumble bee. This includes avoidance of unnecessary disturbance to, trimming, or removal of milkweed (*Asclepias *spp.), pincushion (*Chaenactis *spp.), lupine (*Lupinus *spp.), burclover (*Medicago *spp.), phacelia (*Phacelia *spp.), and sage (*Salvia *spp.). Other nectar sources include snapdragon (*Antirrhinum *spp.), clarkia (*Clarkia *spp.), poppy (*Eschscholzia *spp.), and buckwheat (*Fagopyrum *spp.) at the project site. A preconstruction survey will be performed for the abovementioned plant species and potential host plants will be clearly marked with flagging or ESA fencing throughout the construction process.*

*During project construction activities, to the extent feasible, efforts will be made to minimize habitat loss in areas known to support host/food plants for the western bumble bee. This includes avoidance of unnecessary disturbance to, trimming, or removal milkweed (*Asclepias *spp.), blackberries (*Rubus *spp.), thistles (*Cirsium *spp.), sorrels (*Oxalis *spp.), lupines (*Lupinus *spp.), vetches (*Vicia *spp.), sunflowers (*Helianthus *spp.), clovers (*Trifolium *spp.), and flowering trees including plum and cherry trees (*Prunus *spp.), locusts (*Robinia *spp.), and willows (*Salix *spp.). A preconstruction survey will be performed for the abovementioned species and potential host plants will be clearly marked with flagging or ESA fencing throughout the construction process.*

GCID will compensate for the permanent loss of suitable foraging bumble bee habitat at a 1:1 ratio by including suitable native plants commonly used as food sources by Crotch's bumble bee and western bumble bee at suitable on-site and/or off-site restoration or preservation areas. A qualified botanist will monitor the restored or preserved habitat annually for 5 years to ensure that habitat conditions have not been degraded and the site continues to include native plants used as food sources by Crotch's bumble bee and western bumble bee. GCID will submit annual monitoring reports that include information on habitat conditions and photographs to USFWS and CDFW.

MM-BIO-7: Coordinate with USFWS and conduct Preconstruction Survey for Elderberry Shrubs and Compensate for Loss of VELB Habitat

During project construction activities, to the extent feasible, efforts will be made to minimize the loss or disturbance to elderberry shrubs within the project area, which could provide suitable habitat for valley elderberry longhorn beetle (VELB). Consultation with the USFWS for potential impacts to VELB will be required prior to conducting a preconstruction survey. A preconstruction survey will be performed by a qualified biologist according to the USFWS's Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS 2017) or updated guidance for the presence of elderberry shrubs. If elderberry shrubs are found within 165 feet of the project site, these shrubs will be clearly marked with flagging. All areas to be avoided during construction activities will be fenced and/or flagged as close to the construction limits as feasible. A setback of 6 meters (20 feet) from the dripline of each elderberry shrub will be established to avoid damage to or killing of an elderberry shrub. A qualified biologist will provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance. A qualified biologist will monitor the work area at project-appropriate intervals to assure that all avoidance and minimization measures are implemented. The amount and duration of monitoring will depend on the project specifics and will be discussed with the USFWS biologist. To the extent feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub, will be conducted outside of the flight season of the VELB (March - July). Trimming may remove or destroy VELB eggs and/or larvae and may reduce the health and vigor of the elderberry shrub. In order to avoid and minimize adverse effects to VELB when trimming, trimming will occur between November and

February and will avoid the removal of any branches or stems that are ≥ 1 inch in diameter. Measures to address regular and/or large-scale maintenance (trimming) will be established in consultation with the USFWS. If impacts to elderberry shrubs cannot be avoided, all elderberry shrubs with stems greater than 1 inch in diameter will be transplanted when the shrubs are dormant (November through mid-February) and have lost their leaves, relocating shrubs as close as possible to their original location if the planting location is suitable for elderberry growth and reproduction and the shrub is protected. If these criteria cannot be met, then the shrub may be transplanted to a USFWS-approved mitigation site. A qualified biologist will be on site for the duration of the transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures through consultation with USFWS. For all unavoidable adverse impacts to VELB or elderberry shrubs, GCID will coordinate with the USFWS to determine the appropriate type and amount of compensatory mitigation, which may include purchase of credits at a USFWS-approved conservation bank, providing on-site mitigation, or establishing and/or protecting habitat for VELB at a minimum 3:1 ratio for permanent impacts to suitable riparian habitat and 1:1 ratio for permanent impacts to suitable non-riparian habitat. GCID will implement the USFWS recommendations regarding the type and amount of mitigation. A qualified biologist will monitor the restored or preserved habitat annually for 5 years to ensure that habitat conditions have not been degraded and the site continues to be occupied by the VELB. GCID will submit annual monitoring reports that include information on habitat conditions, VELB occupancy, and photographs to USFWS.

MM-BIO-8: Conduct Preconstruction Survey for Western Spadefoot Toad Habitat and Minimize Construction Impacts

During construction activities, to the extent feasible, efforts will be made to minimize loss of suitable western spadefoot habitat in areas with sandy soils among riverbanks, willow scrub, mixed riparian forest, Santa Barbara sedge meadow, non-native annual grasslands, and ruderal vegetation communities. For work conducted during the western spadefoot toad migration and breeding season (November 1 to May 31), a qualified biologist will be present for initial ground disturbing activities and perform a preconstruction clearance survey, including access roads, before the beginning of construction each day, especially in areas with moist soils. When feasible, there will be a 50-foot no-disturbance buffer around burrows that provide suitable upland habitat for western spadefoot toad, as determined by a qualified biologist. If western spadefoot toads are detected within the work area, no work will occur within 50 feet of the individuals until they move out of harm's way on their own or are relocated by a qualified biologist outside of the active work site to the nearest burrow outside of the construction impact area. Prior to beginning each work day, a qualified biologist will inspect underneath equipment and stored pipes greater than 1.2 inches (3 cm) in diameter for western spadefoot toad. If any are found they will be allowed to move out of the construction area of their own accord. Trenches and holes will be covered and inspected daily for stranded animals. Trenches and holes deeper than one foot deep will contain escape ramps (maximum slope of 2:1) to allow trapped

animals to escape uncovered holes or trenches. Holes and trenches will be inspected prior to filling. The on-site biologist will determine in consultation with USFWS and CDFW if capturing and translocating the individual(s) is necessary. Capture and translocation will comply with all conditions and protective measures identified by USFWS and CDFW.

MM-BIO-9: Conduct Preconstruction Survey for Habitat of Anthicid Beetle Species and Provide Compensation for Loss of Habitat

During project construction activities, to the extent feasible, efforts will be made to minimize loss of suitable habitat loss for the Antioch Dunes anthicid beetle and the Sacramento anthicid beetle. A preconstruction survey will be performed by a qualified entomologist (experienced with anthicid beetle identification and habitat suitability determination) to assess and survey potentially suitable habitat for Antioch Dunes anthicid beetles and Sacramento anthicid beetles. The entomologist will clearly mark with flagging or ESA fencing throughout the construction process areas with sandy soils among riverbanks, sandbar, Santa Barbara sedge meadow, and ruderal vegetation communities that can be avoided during construction. If suitable habitat is not present or no Antioch Dunes anthicid beetles or Sacramento anthicid beetles are observed and the entomologist determines that no further surveys are needed, no further actions are required. If either beetle species is observed, the entomologist will relocate the beetles to suitable habitat outside the impact area. The entomologist will report observations of either beetle species to CDFW and submit occurrence data to the CNDDB. GCID will compensate for the permanent loss of occupied Antioch Dunes anthicid beetle and/or Sacramento anthicid beetle habitat by restoring disturbed habitat or preserving occupied habitat within the Sacramento River in the vicinity of the affected area at a 1:1 ratio. A qualified entomologist will monitor the restored or preserved habitat annually for 5 years to ensure that habitat conditions have not been degraded and the site continues to be occupied by the beetle(s). GCID will submit annual monitoring reports that include information on habitat conditions, beetle occupancy, and photographs to CDFW.

MM-BIO-10: Conduct Preconstruction Surveys for Northwestern Pond Turtle and Minimize Construction Impacts

During project construction activities, to the extent feasible, efforts will be made to minimize habitat loss to upland areas that support potential nesting of northwestern pond turtle among the riverbanks, willow scrub, mixed riparian forest, Santa Barbara sedge meadow, non-native annual grasslands, and ruderal vegetation communities of the project site. A qualified biologist will be present for initial ground disturbing activities and will perform a preconstruction clearance survey before the beginning of construction each day. If northwestern pond turtles are detected within the work area, no work will occur within 50 feet of the individual until they are relocated outside of the active work site. The on-site biologist will determine in consultation with USFWS and CDFW if capturing and translocating the

individual(s) is necessary. Capture and translocation will comply with all conditions and protective measures identified by USFWS and CDFW.

MM-BIO-11: Conduct Preconstruction Surveys for Bank Swallow and Minimize Construction Impacts

Bank swallow habitat is dynamic and nesting colonies appear and disappear from season to season. To avoid and minimize impacts to bank swallows during the breeding season from March 15 to August 15, and to nesting habitat along the streambanks within the project impact zone, the following avoidance and minimization measures will be implemented:

1. *Within one week prior to the start of construction within 500 feet of suitable or historical bank swallow nesting habitat, a qualified biologist will perform a nest survey.*
2. *If no bank swallow nesting activity is observed, no further measures are warranted and work can proceed.*
3. *If bank swallow nesting within or adjacent to the project is observed, a no-disturbance buffer will be established around active nests to avoid disturbance or destruction of the site until nesting activities are complete and the young are volant and feeding on their own as determined by a qualified biologist. The extent of the buffers will be determined by a qualified biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and disturbance, ambient levels of noise or other disturbances, and other topographical or artificial barriers. A biological monitor will be on-site to monitor the nest colony for signs of disturbance. The qualified biologist will monitor the nest colony regularly to document nest phenology and evaluate potential project-related nest disturbance. If behaviors indicate stress or potential nest abandonment, the qualified biologist will have the authority to stop work and/or expand the size of the buffer until the bird has returned to the next or shows signs of recovery from the stress. Nest observation should be done from a distance sufficient to minimize disturbance associated with nest monitoring. Additionally, the following measures will be implemented.*
    a. *Avoid unnecessary human presence near the colony within fenced areas should they become established.*
    b. *Avoid disturbance near colonies that cause strong vibrations that could result in the collapse of nest burrows.*
    c. *Avoid staging or using heavy machinery in close proximity to active colonies.*

MM-BIO-12: Conduct Preconstruction Surveys for Swainson's Hawk and Minimize Construction Impacts

Prior to and during project construction activities, to the extent feasible, efforts will be made to minimize impacts to Swainson's hawk nests within 0.5 mile of the project footprint. The following measures from the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (CDFG 2000) will be implemented:

1. *If project construction begins during the breeding season (i.e., March 1 and September 15), preconstruction surveys will be conducted within the project footprint and within a 0.5-mile radius of the project site, by a qualified biologist, no more than two weeks prior to equipment or material staging, pruning/grubbing, or surface-disturbing activities. Surveys will be conducted in accordance with the survey protocol as follows:*
    a. *All potential nest trees within a 0.5-mile radius will be surveyed for presence of nests. If nests are found during the breeding season, a Monitoring and Mitigation Plan will be prepared in consultation with CDFW and the lead agency, identifying appropriate buffers and avoidance of disturbance to adjacent foraging habitat. Surveys will be conducted for at least two of the following periods immediately prior to project initiation:*
        i. *Period 1: One survey January-March 20 (optional)*
        ii. *Period 2: Three surveys March 20-April 15 (nest-building)*
        iii. *Period 3: Three surveys April 5-20 (egg-laying)*
        iv. *Period 4: Monitor known nest sites only April 21-June 10*
        v. *Period 5: Three surveys June 10-July 30 (fledging, post-fledging)*

    If active nests (i.e., nests in the egg laying, incubating, nestling, or fledgling stages) are found within 0.5-mile of the project footprint, non-disturbance buffers will be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the nesting pair's tolerance to disturbance and the type/duration of potential disturbance. No work will occur within the non-disturbance buffers until the young have fledged as determined by a qualified biologist. Buffer size will be determined in cooperation with CDFW and USFWS Migratory Bird Treaty Office based on the type of work activity to be performed and the sensitivity of the species/ individual(s) to disturbance. If buffers are established and it is determined that project activities are resulting in nest disturbance, work will cease immediately and the CDFW and USFWS Migratory Bird Treaty Office will be contacted for further guidance. Work will resume only with the concurrence of CDFW and USFWS and implementation of any protective measures identified by the agencies.

MM-BIO-13: Conduct Preconstruction Surveys for Western Yellow-Billed Cuckoo and Minimize Construction Impacts

To protect Western Yellow-billed Cuckoo and their nesting habitat along the streambanks within the project area, the following measures will be implemented during the breeding season from May 15 through September 15:

1. *To the degree feasible, all vegetation within willow scrub and mixed riparian forest will be cleared outside of the breeding season (May 15–September 15) to prevent disruption of breeding attempts and injuries and mortality of adults, eggs, or young that could occur if vegetation removal were to take place after species arrive at the breeding areas.*

2. *If removal of potential nesting habitat occurs during the breeding season from May 15 through September 15, a qualified biologist will conduct a nesting bird survey in accordance with the USFWS survey protocol. If no active nests are found, no further mitigation is necessary.*

   If active nests (i.e., nests with eggs or young birds present) are found, non-disturbance buffers will be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the nesting pair's tolerance to disturbance, and the type/duration of potential disturbance. The non-disturbance zone may be further reduced if a qualified biologist is present to educate workers about the sensitivity of working in proximity to active nests and be on site to monitor the nest during work adjacent to the buffer to determine if project activities are causing nest disturbance. The qualified biologist will conduct regular monitoring visits to document nest phenology and potential for disturbance during the different nest stages. If buffers are established and it is determined that project activities are resulting in nest disturbance, work will cease immediately and the CDFW and the USFWS Migratory Bird Regional Permit Office will be contacted for further guidance. Work will resume only with the concurrence of CDFW and USFWS and implementation of any protective measures identified by the agencies.

MM-BIO-14: Conduct Preconstruction Surveys for Bald Eagle and Minimize Construction Impacts

Prior to and during project construction activities, to the extent feasible, efforts will be made to minimize impacts to bald eagle nests and winter roosts within 0.5 mile of the project site. The following measures from the Nebraska Bald Eagle Survey Protocol (USFWS 2020) and Bald Eagle Monitoring Guidelines (USFWS 2007) will be implemented:

1. *If project construction occurs during the breeding season (i.e., February 1 and October 1), nest surveys will be conducted within the project footprint and a 0.5-mile radius of the project footprint by a qualified biologist. If construction begins between February 1 and April 15, a nest survey will be completed at least one, but not more than 14 days, prior to construction. If construction begins between April 15 and October 1, a nest survey completed in March is sufficient, as nests will likely already be constructed if nesting will occur that year.*

2. *If an active nest is determined to be present within 0.5 mile from the project footprint, the biologist will regularly monitor the nesting cycle to track nest phenology. Nest observation will be done from a distance of 660 feet from the nest to minimize disturbance associated with nest monitoring (USFWS 2007).*

3. *Throughout the construction activities occurring during the nesting season from February 1 and October 1, regular monitoring of active nests will be performed to document disturbance-related behaviors. If disturbance is noted, CDFW and USFWS Migratory Bird Treaty Office will be contacted to determine suitable measures to avoid or minimize the disturbance. All recommended measures will be implemented.*

   Outside of the nesting season, a qualified biologist will monitor bald eagles to determine if the project construction activities are resulting in disturbance to winter roosts sites. If disturbance is noted, CDFW and USFWS Migratory Bird Treaty Office will be contacted to determine suitable measures to avoid or minimize the disturbance. Work will resume only with the concurrence of CDFW and USFWS and implementation of all protective measures identified by the agencies.

MM-BIO-15: Conduct Preconstruction Surveys for White-Tailed Kites and Nesting Migratory Birds and Minimize Construction Impacts

Prior to and during project construction activities, to the extent feasible, efforts will be made to minimize impacts to white-tailed kites and nesting migratory birds, with implementation of the following measures:

1. *Tree removal, pruning, or grubbing activities will be conducted in the fall during the non-breeding season (i.e., between September 1 and January 31), if possible, to avoid impacts to nesting migratory birds.*

2. *If project construction begins during the breeding season (February 1 to August 31), preconstruction nesting bird surveys will be conducted within the project footprint by a qualified biologist no more than 14 days prior to equipment or material staging, pruning/grubbing, or surface-disturbing activities. If present, a 50-foot buffer for migratory birds and a 500-foot buffer for raptors will be established. If no active nests are found, no further mitigation is necessary.*

   If active nests (i.e., nests with eggs or young birds present) are found, non-disturbance buffers will be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the nesting pair's tolerance to disturbance, and the type/duration of potential disturbance. The non-disturbance zone may be further reduced if a qualified biologist is present to educate workers about the sensitivity of working in proximity to active nests and be on site to monitor the nest during work adjacent to the buffer to determine if project activities are causing nest disturbance. The qualified biologist will conduct regular monitoring visits to document nest phenology and potential for disturbance during the different nest stages. If buffers are established and it is determined that project activities are resulting in nest disturbance, work will cease

immediately and the CDFW and the USFWS Migratory Bird Regional Permit Office will be contacted for further guidance. Work will resume only with the concurrence of CDFW and USFWS and implementation of all protective measures identified by the agencies.

MM-BIO-16: Conduct Preconstruction Surveys for Roosting Bat Species and Minimize Construction Impacts

The following measures will be implemented to avoid and minimize impacts to roosting hoary, long-eared myotis, pallid, silver-haired, western red, and Yuma myotis bats:

1. *Prior to tree trimming or vegetation removal, a qualified biologist will conduct preconstruction surveys for all areas that provide suitable bat roosting habitat including snags, rotten stumps, decadent trees with broken limbs, exfoliating bark, bole cavities or hollows, dense foliage, structures, etc. Sensitive habitat areas and roost sites will be avoided to the maximum extent practicable. If no suitable roost sites are identified, no further minimization measures are necessary.*
2. *Prior to ground-disturbing activities that affect large rocks, crevices, downed woody debris, and other suitable ground-roosting habitat, the areas will be inspected by a qualified biologist.*
3. *If potential tree roost sites (trees, snags, etc.) are to be removed or trimmed, limbs smaller than 3 inches in diameter will be cut and the tree left overnight to allow any bats that may be using the tree/snag time to locate another roost. A qualified biological monitor will be present during the trimming or removal of all trees, snags, or stumps to inspect the downed limbs and foliage for roosting bats.*

   If live bats are detected in the project area, work will cease and CDFW will be consulted on how to proceed. A non-disturbance buffer zone of 50 feet will be established until guidance from CDFW is obtained. Work will resume only with the concurrence of CDFW and implementation of all protective measures identified by CDFW.

MM-BIO-17: Conduct Preconstruction Surveys for North American Porcupine and Minimize Construction Impacts

To minimize habitat loss to North American porcupine, prior to tree trimming or vegetation removal within the valley oak woodland, mixed riparian forest, and willow scrub vegetation communities and along the Sacramento River, a qualified biologist will conduct preconstruction surveys for North American porcupines and their habitat including trees, snags, rotten stumps, decadent trees with broken limbs, exfoliating bark, bole cavities or hollows, dense foliage, rock outcroppings, structures, etc. If porcupines are observed, all work within 50 feet of the individual will cease immediately and the biological monitor will be notified. The qualified biologist will monitor the individual until it has moved out of the project footprint on its own volition and must not be captured and relocated unless authorized by CDFW.

MM-BIO-18: Work Within In-Water Work Window

In-water construction will be restricted to between July 15 and October 31 annually to avoid or minimize working when federally and state-listed threatened and endangered fishes may be present.

MM-BIO-19: Conduct Real-Time Presence Assessment Using Migration Data

Prior to and during mobilization, staging, or implementation of proposed project activities, a biological monitor or designated biologist will consult data on juvenile salmonid and juvenile sturgeon migration and passage daily from monitoring stations at Red Bluff (operated by USFWS, reported biweekly) and at the GCID diversion fish screen (operated by GCID when water temperatures are <69.8°, reported daily) to inform on the potential for and relative abundance of listed fish species to be in the project area.

MM-BIO-20: Install Block Nets

Where and when feasible depending on hydraulic conditions, seines will be used to evacuate fish, and block nets will be used to exclude fish from re-entering in-water work areas for installation of temporary water diversions and turbidity curtains around spur dikes and rock slope protection sites, and if and when, the land bridge is installed in the side channel between Montgomery Island and the mid-channel bar to access the bar. During the proposed in-water construction window, work areas are anticipated to be largely wadable (≤3 feet deep) up to 5-feet deep. These conditions will allow for any listed and non-listed fish species present in the project area to be herded out of in-water work areas by dragging 75- to 100-foot-long seines (0.125-inch mesh size) of sufficient depth, using appropriate seining technique (like that described by Hahn et al. [2007]), through the entire width of work areas, starting from upstream to downstream. It will likely be necessary to incrementally clear and block areas in short segments as temporary construction features are installed and removed.

Block nets will be positioned, typically, perpendicular to the shoreline, upstream and downstream of work areas, and a seine will be pulled between them to clear the work area, setting the seine as the outer block net after two or three passes to remove fish. Observations of fish will be recorded by species and life stage immediately prior to and throughout fish removal from the work area. The seining crew will conduct close observations at the face of the seine net for the presence of fish while pulling the seine to inform the designated biologist's determination of when fish have been cleared from the work area.

After completing this fish-herding process, the block nets will be secured to prevent fish from reentering the work area while in-water work is done. The block nets will be removed once the in-water structure or fill is in place or removed. The block net (lead line) will be securely weighted down to prevent fish from re-entering the area by moving under the net. If the block nets are breached during construction, repairs will be made immediately upon discovery, and the work area will be reinspected by the designated biologist to ensure any fish that re-enter the work area are cleared before proceeding. If any of these proposed methods are found to be insufficient in clearing and excluding fish, or if listed species

are observed in the work area, the designated biologist will immediately consult with NMFS and CDFW to modify these methods or implement alternative methods to improve fish exclusion efficacy.

MM-BIO-21: Conduct Biological Monitoring

GCID will employ designated biologists and biological monitors to conduct biological monitoring for the proposed project. Designated biologists will be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present in the action area. Biological monitors will have some familiarity with the biology of the region and will work under the direction of designated biologists.

Daily Clearance Fish Surveys: Immediately prior to the initiation of any construction each morning, a clearance survey will be conducted in aquatic and upland areas by a biological monitor to ensure no listed species are in the work area. If a listed species is in the work area, based on the professional judgment of the biological monitor, if proposed project activities can be conducted without injuring or harassing the animal, it may be left at the location of discovery and monitored by the biological monitor while work continues. If construction activities pose a risk to the animal, work will not proceed until the animal has left the area on its own accord. All construction personnel will be notified, and at no time will work occur within 50 feet of the listed species without a biological monitor present.

> *In-Water Construction/Temporary Structure Removal Fish Monitoring: Throughout installation and removal of the temporary construction platform bridge and installation of the spur dikes, a biological monitor will be on site to monitor the work area to ensure that no special-status fish species are present in the project area. The biological monitor will have the authority to halt construction if a listed or special-status species is observed within the project area. Based on the professional judgment of the biological monitor, if proposed project activities can be conducted without injuring or harassing the animal, it will be monitored by the biological monitor while work continues. If construction activities pose a risk to the animal, work will stop and CDFW and NMFS will be contacted for further guidance on protective measures. Work will resume only with the concurrence of CDFW and NMFS and implementation of all protective measures identified by the agencies.*

Reporting: The biological monitor/designated biologist will complete daily monitoring logs, which will be summarized in a letter report and submitted to NMFS and CDFW within 30 days of completion of construction activities.

MM-BIO-22: Conduct Rare Plant Survey and Minimize Construction Impacts

A rare plant survey of the project area will be conducted by a qualified botanist following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities State of California (CDFW 2018), or the most current protocols. Rare plant surveys of the project area are to be conducted during the blooming period for plant species which have been

identified with the potential for occurrence. A report describing methods and results as prescribed by the CDFW protocol will be prepared and submitted to CDFW. The report will include an assessment of potential project impacts, a discussion of the degree of impact, if any, and recommended measures to avoid, minimize, or mitigate impacts to special status plants. If rare plant populations are identified they will be flagged in the field. Impacts will be avoided where feasible by establishing exclusion areas and providing ESA fencing around rare plant populations. No ground-disturbing activities will be allowed within the exclusion areas. If exclusion areas cannot feasibly be established for avoidance and construction would result in impacts to rare plant species, GCID will consult with CDFW on appropriate mitigation, which could include transplantation or collection of seed to apply in on-site restoration areas. GCID will implement all measures identified in the report necessary to reduce impacts to less than significant.

MM-BIO-23: Implement Tree Avoidance Measures and Replanting Requirements

*Construction will require removal or trimming of mature trees, potentially including valley oak (*Quercus lobata*), western sycamore (*Platanus racemosa*), black walnut (*Juglans nigra*), willows (*Salix *spp.), white alder (*Alnus rhombifolia*), and Fremont cottonwood (*Populus fremontii*). Where feasible, areas that lack riparian vegetation and support grassland adjacent to trees will be used for staging, and large-sized heritage valley oaks and other species meeting heritage size will be retained. A tree survey, to be conducted prior to tree removal, will account for all native tree species greater than 2 inches DBH.*

GCID will plant riparian tree species and associated shrub species in an area on the southwest bank of Montgomery Island commensurate with the area of temporary impacts at a 1:1 ratio and with the area of permanent impacts at a 2:1 ratio. Riparian vegetation that cannot be propagated through cuttings will be installed as liners or the smallest feasible container size. Valley oak, black walnut, white alder, boxelder, Oregon ash, and western sycamore will be planted at elevations where they would not be impacted by river flows. Dry season irrigation and weed control will be implemented to ensure the success of planted riparian restoration vegetation. Locally sourced vegetation will be used and could include contract grown oak and walnut from on-site collection to grow restoration materials.

Residual Impact: The proposed project would result in a combination of temporary and permanent impacts to habitats that support a broad range of special-status terrestrial and aquatic species. These impacts include the removal of riparian vegetation, filling of waters and riparian areas, and in-water construction activities that could lead to injury, displacement, or mortality of sensitive wildlife. Additionally, riparian tree species would be permanently removed, which contributes to the loss of nesting, foraging, and sheltering habitat for birds, mammals, amphibians, and insects. As such, the proposed project has the potential to result in significant direct and indirect impacts to VELB, western spadefoot, northwestern pond turtle, Crotch's bumble bee, white-tailed kite, Swainson's hawk, and several special-status bat species, as well as fish species including Central Valley DPS steelhead, Central Valley spring-run ESU Chinook salmon, and Sacramento River winter-run ESU

Chinook salmon. However, implementation of mitigation measures MM-BIO-1 through MM-BIO-9 and MM-BIO-11 through MM-BIO-22 would reduce these potentially significant impacts to less-than-significant levels. These measures include the following:

- **Biological training and oversight (MM-BIO-1, MM-BIO-3),** including daily biological monitoring and worker environmental awareness programs
- **Designation of environmentally sensitive areas (MM-BIO-2) and implementation of construction best management practices (MM-BIO-4, MM-BIO-5**) to prevent unauthorized disturbance and erosion
- **Preconstruction surveys, species-specific buffers and where needed, agency approved protective measures (MM-BIO-6 through MM-BIO-17)** targeting VELB, bumble bees, nesting raptors, songbirds, roosting bats, porcupines, and other special-status terrestrial wildlife
- **Strict adherence to the in-water work window (MM-BIO-18)** to avoid peak presence periods for anadromous fish
- **Use of migration and fish passage data (MM-BIO-19)** to inform construction timing and potential species presence in real time
- **Active fish exclusion and monitoring methods (MM-BIO-20 and MM-BIO-21)**, including seining, use of block nets, and daily aquatic species clearance surveys
- **Rare plant surveys, agency consultation and, where needed, agency approved avoidance and mitigation measures (MM-BIO-22)** to avoid and potentially mitigate for impacts to rare plants
- **Vegetation restoration and compensatory planting (MM-BIO-23),** with native species revegetation of impacted riparian areas and Montgomery Island

Specifically, for terrestrial species such as VELB, western spadefoot, and pond turtle, mitigation measures include daily preconstruction clearance surveys, biological monitoring, habitat avoidance protocols, and, where impacts cannot be avoided, coordination with relevant wildlife agencies (e.g., USFWS and CDFW) for relocation or offsetting of impacts. Long-term habitat stabilization provided by the spur dikes and rock protection features will improve habitat quality and ecological function, benefiting several of these species.

For bird species including Swainson's hawk, white-tailed kite, western yellow-billed cuckoo, and nesting migratory birds, targeted preconstruction surveys and seasonal restrictions on vegetation removal would avoid active nests and minimize risk of disturbance. If nests are discovered, species-specific buffers and agency coordination would ensure protection of active breeding individuals and habitats. Although impacts to bank swallows would be less than significant and mitigation is not required, MM-BIO-11 would ensure that pre-construction surveys are conducted and work in the area of any nest would be postponed, which would further reduce potential impacts.

For special-status fish species—including Chinook salmon (winter-run and spring-run ESUs), Central Valley DPS steelhead, and SDPS green sturgeon—potential construction-related impacts such as temporary turbidity, substrate disturbance, and habitat modification would be reduced through timing restrictions, fish exclusion practices, and habitat restoration commitments. Although temporary impacts to EFH for Pacific salmon may occur, long-term benefits of the proposed project include improved hydraulic function at the GCID diversion, reduced risk of avulsion, and reestablishment of a functioning riparian zone, which collectively support fish passage and reduce predation risk.

For special-status plant species—including thread-leaf beakseed, silky crypthantha, shield-bracted monkey flower, Mexican mosquito fern, or wooly rose-mallow— potential construction-related direct or indirect impacts would be reduced through rare plant surveys, consultation with CDFW and implementation of all recommended avoidance or mitigation measures.

In summary, while the proposed project would have potentially significant impacts to numerous candidate, sensitive, and special-status species, implementation of mitigation measures would reduce these impacts to a less-than-significant level.

BIO-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less-Than-Significant Impact After Mitigation. The proposed project includes the installation of sheet piles with riprap and rock spur dikes along the east and west banks of the Sacramento River. Construction of these elements will require the removal of riparian vegetation, resulting in both temporary and permanent impacts. These activities will be subject to regulation by CDFW and will require issuance of a Streambed Alteration Agreement under Section 1600 of the CFGC.

Phase 1 and Phase 2 would require removal of vegetation in areas of approximately 17,000 square feet (sf) and 24,000 sf, respectively.[2] Although some vegetation—particularly along access routes—will be selectively trimmed rather than fully removed, resulting in the potential for natural regrowth from cut stems and stumps, permanent clearing will occur in areas directly surrounding the sheet piles, spur dikes, and riprap pads. Trimming of vegetation along access routes would be implemented such that mature heritage-sized valley oak and sycamore trees would not be removed.

Mitigation: Mitigation measure ***MM-BIO-23: Tree Avoidance Measures and Tree Replanting Requirements*** (see BIO-1) would be implemented to reduce the potential impacts to riparian habitats.

[2] These numbers are preliminary and would be confirmed as Phase 1 and Phase 2 project elements occur to ensure adequate replanting.

Residual Impact: MM-BIO-23 requires the preservation of heritage-sized native trees wherever feasible and mandates the replanting of all impacted native riparian trees on a 2:1 in-kind basis using container stock or cuttings of native species. Replanting would occur within the designated restoration zone on Montgomery Island to ensure no net loss of riparian function and structure. Permanent impacts to the riparian areas on the banks of the river, specifically in the vicinity of the sheet pile zones and spur dikes, would be mitigated. Mitigation for riparian impacts includes the replacement of all California native trees at a 2:1 ratio in-kind for permanent impacts associated with the proposed project elements where clearing and grubbing would occur. Implementation of MM-BIO-23 would ensure that impacts to sensitive riparian communities are fully compensated and that riparian ecosystem services are restored over time. With mitigation, residual impacts to riparian habitat would be less than significant.

BIO-3: Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-Than-Significant Impact After Mitigation. The proposed project would result in impacts to navigable waters of the United States through temporary and permanent cut and fill below the OHWM on the Sacramento River, regulated by USACE and RWQCB. The proposed project would also result in the removal of sediments that have accumulated in the mid-channel bar between the banks on which sheet pile and spur dike stabilization work is proposed. Installation of the spur dikes will result in the stabilization of the opposing eroded banks with the slowing of water movement and the natural removal of the mid-channel bar through higher velocity in the middle of the river channel. The surface area of the mid-channel bar is projected to reduce in proportion to the amount of sedimentation that will occur between the spur dikes. The balance of fill from the installation of spur dikes and sheet piles would be offset from the loss of the midchannel bar through the force of river water over time, and the project is modeled to have a net zero impact. Gradual sedimentation between the spur dikes and reduction of sediment in the mid-channel bar is projected to take a few years from project implementation. The fills associated with the restoration of the eroding banks would be offset by the naturally occurring reduction or excavation of the mid-channel bar. Impact to waters of the United States would be less than significant.

The proposed project would result in impacts to state and federally protected wetlands, specifically with the east bank rock protection riprap pads and rock protection berm elements that would be constructed during Phases 1 and 2. In total, it is anticipated that Phase 1 and Phase 2 would result in

impacts to wetlands in areas of approximately 3,500 sf and 20,500 sf, respectively[3]. Impacts would be potentially significant.

Mitigation: Mitigation measure MM-BIO-24 would be implemented to reduce potential impacts to jurisdictional wetlands and waters:

MM-BIO-24: Obtain Required Permits and Implement Wetland Mitigation

Required permits from the USACE, RWQCB, and CDFW will be obtained prior to proposed project implementation. All permit conditions will be complied with. Mitigation for project-related permanent impacts to jurisdictional wetlands will be provided at a minimum 1:1 ratio through on-site and/or off-site restoration and enhancement and/or purchase of mitigation credits.

Residual Impact: Implementation of MM-BIO-23 would require that permits from USACE, RWQCB, and CDFW be obtained and complied with. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters would be provided at a minimum 1:1 ratio. With implementation of this measure, impacts would be reduced to less than significant.

BIO-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less-Than-Significant Impact After Mitigation. Removal of mature trees may impact roosting, foraging, and nesting sites for migratory bird species within and adjacent to project areas. Site grading, excavation, and construction activities associated with these projects could directly impact, temporarily affect, or displace potential bird species nesting. There would be temporary increases in noise and human activity from construction of the proposed project. Construction has the potential to result in accidental spills if equipment and staging are improperly managed. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into habitats either directly or through surface runoff. Contaminants may be toxic to wildlife.

Local wildlife species and migratory birds are found throughout the project area within existing habitats throughout the year. The removal of bands of riparian habitat and work along the Sacramento River channel have the potential to interfere with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Salmonids, sturgeon, and other native fisheries use the Sacramento River for movement and nursery sites. The fills associated with scour hole rock

[3] These numbers are preliminary and would be confirmed as Phase 1 and Phase 2 project elements occur to ensure adequate mitigation.

protection below the gradient facility could impede fish movement in the Sacramento River. Impacts would be considered potentially significant.

Mitigation: The following mitigation measures would be implemented to reduce the potential significant impacts to biological resources: ***MM-BIO-1: Worker Environmental Awareness Training***; ***MM-BIO-2: Designate Environmentally Sensitive Areas***; ***MM-BIO-3: On-Site Biological Monitoring***; ***MM-BIO-4: Construction Site Management Practices***; ***MM-BIO-6 to MM-BIO-17: Preconstruction Surveys***; ***MM-BIO-18: Work Within In-Water Work Window***; ***MM-BIO-19: Real-Time Presence Assessment Using Migration Data***; ***MM-BIO-20: Installation of Block Nets***; ***MM-BIO-21: Biological Monitoring***; and ***MM-BIO-23: Tree Avoidance Measures and Replanting Requirements*** (see BIO-1). Although impacts to bank swallow would be less than significant and mitigation is not required, mitigation measure ***MM-BIO-11: Preconstruction Surveys for Bank Swallow*** (see BIO-1) would be implemented to further reduce potential impacts.

Residual Impact: Implementation of MM-BIO-1 would provide worker education on special status wildlife species in the project area. MM-BIO-2 would map and flag potential species habitats to avoid or minimize impacts from project construction. Implementation of MM-BIO-3 and MM-BIO-21 would place qualified biological monitors at the project site to prevent project-related impacts on a daily basis and to ensure that other types of direct and indirect impacts to species are avoided or minimized through requiring construction timing requirements, inspections, clearing requirements, clean working conditions, and proper agency reporting, among other measures during project construction. MM-BIO-4 would implement construction site best management practices. Implementation of MM-BIO-6 to MM-BIO-17 would include pre-construction surveys to ensure that no special status species would be in the project area during implementation of the project. MM-BIO-18, MM-BIO-19, and MM-BIO-20 would ensure that no fish species are impacted by the proposed project. Implementation of MM-BIO-23 would specify trees to avoid and replanting requirements. Impacts to migratory species, wildlife corridors, or nursery sites would be reduced to less than significant with mitigation.

BIO-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-Than-Significant Impact After Mitigation. Relevant local policies and ordinances within the project area include those that require or encourage the following:

- No net loss of waters
- Avoidance, minimization, and full mitigation for impacts to special status species, wetlands and other waters of the United States, and other sensitive natural communities
- Pre-construction surveys for special status species

- Protection of native plant species, riparian habitats, wetlands, other sensitive communities, and migration routes through regulation of vegetation removal, restriction of sediment input to streams, and establishment of setbacks
- Tree protection standards that discourage removal of mature trees that provide wildlife habitat
- Installation of barrier fencing during construction to protect environmentally sensitive resources
- Avoidance of the introduction and spread of invasive plant species
- Environmental training for employees working around environmentally sensitive areas
- Restriction of construction to times of year that will avoid impacts to special status species

As described in BIO-1, the proposed project would result in the permanent reduction of nesting, foraging, and rearing habitat for terrestrial species in the project area. The proposed project, as designed, could potentially cause significant impacts to FESA-listed or designated critical habitat fish species that may be present in the project area. Project-related impacts to special-status plant species could be significant in the project area if these species have established in the 3 years since the last rare plant survey and the population size is substantial enough to be considered a significant impact on the species. As described in BIO-3, construction activities have the potential to fill and significantly impact wetlands. The proposed project could conflict with local policies or ordinances to protect biological resources. This would be considered a potentially significant impact.

Mitigation: The following mitigation measures would be implemented to reduce the potential significant impacts to biological resources: ***MM-BIO-1: Worker Environmental Awareness Training; MM-BIO-2: Designate Environmentally Sensitive Areas; MM-BIO-3: On-Site Biological Monitoring; MM-BIO-4: Construction Site Management Practices; MM-BIO-6 to MM-BIO-17: Preconstruction Surveys; MM-BIO-18: Work Within In-Water Work Window; MM-BIO-19: Real-Time Presence Assessment Using Migration Data; MM-BIO-20: Installation of Block Nets; MM-BIO-21: Biological Monitoring; MM-BIO-22: Rare Plant Surveys; MM-BIO-23: Tree Avoidance Measures and Replanting Requirements*** (see BIO-1); and ***MM-BIO-24: Obtain Required Permits and Implement Wetland Mitigation*** (see BIO-3). Although impacts to bank swallow would be less than significant and mitigation is not required, mitigation measure ***MM-BIO-11: Preconstruction Surveys for Bank Swallow*** (see BIO-1) would be implemented to further reduce potential impacts.

Residual Impact: Implementation of mitigation measures would ensure consistency with applicable local and regional policies and ordinances designed to protect biological resources. Specifically, MM-BIO-1 would educate all personnel on sensitive biological resources and enforce compliance with protection measures, directly supporting policies requiring environmental training. MM-BIO-2 would ensure that areas supporting sensitive habitats—including riparian corridors, wetlands, and

protected trees—are visibly demarcated and avoided during construction, consistent with tree protection and habitat avoidance ordinances. MM-BIO-3 and MM-BIO-21 would ensure real-time oversight of all project activities. Biological monitors would be empowered to halt work in the event of noncompliance or potential harm to protected biological resources, thereby enforcing local resource protection standards and tree preservation policies. MM-BIO-4 would prevent pollution and sedimentation, critical elements of policies that safeguard riparian and aquatic habitats. MM-BIO-6 through MM-BIO-17 would verify the absence of special-status plant and animal species prior to construction. This ensures avoidance or mitigation of impacts in compliance with ordinances requiring pre-disturbance biological resource evaluations and protections. MM-BIO-18 through MM-BIO-20 would minimize impacts to special-status fish and aquatic habitats. MM-BIO-22 would require rare plant surveys, which would minimize impacts to special status plant species. MM-BIO-23 directly supports compliance with tree preservation ordinances. Where mature native trees must be removed, their replacement in-kind at a minimum 1:1 ratio within restoration zones ensures that no net loss of riparian canopy and associated habitat functions occurs. Implementation of MM-BIO-24 would require permits from USACE, RWQCB, and CDFW to be obtained and complied with. Mitigation for project-related permanent impacts to jurisdictional wetlands or other waters will be provided at a minimum 1:1 ratio.

These mitigation measures collectively ensure that construction activities avoid, minimize, or compensate for impacts to sensitive biological resources, including special-status species, wetlands, riparian vegetation, and mature native trees. They also fulfill key local and regional policy objectives such as no net loss of sensitive habitat, avoidance of invasive species, and minimization of sediment input to streams.

With the implementation of these measures, the proposed project would not conflict with any local biological resource policies or ordinances. Therefore, the residual impact would be considered less than significant.

BIO-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project is subject to the BRCP (Butte County Association of Governments 2007) and would comply with all provisions of the BRCP, including coordination with the applicable parties. The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. There would be no impact.

3.3.5 Cultural Resources

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☐	☒
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c.	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.3.5.1 Affected Environment

Consideration of cultural resources includes potential impacts to historic built environment, archaeological resources, and human remains. Identification of potential impacts to cultural resources within this project area was completed using a records search in the California Historic Resources Information System (CHRIS) maintained by the Northeast Information Center (File No. NE24-511) and by reviewing historic maps and aerial photographs.

Records provided by the CHRIS database search indicate that the majority of the project area was surveyed by three prior investigations (Johnson 1974; Peak and Associates 1995; Arrington and Hanes 2018). These surveys did not record archaeological or built environment resources in the project area. Arrington and Hanes (2018) argue that the area has low potential to contain buried archaeological resources due to documented Native American land use in the ethnographic period, documented archaeological site locations, and the geological conditions within the project area. The staging area on the east bank has not been previously surveyed; however, readily available historic maps and aerial photographs were reviewed to understand whether additional unrecorded resources are likely to exist within this area. Extensive excavation is depicted within the expected staging area. Aerial photographs as far back as 2003 depict apparent borrow, evolving vehicle trails, and widespread disturbance and vegetation clearing that all appear consistent with materials handling and equipment maneuvering in the non-surveyed east bank staging area. The apparent borrow pit is clearly depicted by 2005. LiDAR imagery captured in 2018 and available through the USGS 3D Elevation Program's Eptium Mapper depicts a large depression that is consistent with borrow activities (USGS 2024).

3.3.5.2 Impact Evaluation

CUL-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

No Impact. No built environment resources are recorded within the project area. General Land Office (GLO) maps incorporating 1870 observations do not depict improvements or other features within the project area. GLO survey data may be limited because the proposed project is within Rancho Capay and Rancho Bosquejo, expansive land grants issued prior to the survey (Colby 1870). Metsker county maps (Metsker 1939a, 1939b) do not depict clear settlement or improvements within the project area. As such, the proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5. There would be no impact.

CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less-Than-Significant Impact After Mitigation. No archaeological resources are recorded or expected within the project area. The nearest recorded archaeological resource is CA-BUT-000106, consisting of lithic and shell artifacts, located approximately 0.25 mile south of the project site. Site CA-BUT-000166 is located over 0.8 mile east of the project site on a relict channel of the Sacramento River; this site includes lithic artifacts and bedrock and mortuary features. Neither site would be affected by the proposed project. Two unrecorded archaeological sites were reported by Peak and Associates (1995). The first site consists of over 100 lithic artifacts, and the second is suspected to be the remains of a rancheria. Both are west of the project area and on a terrace elevated approximately 20 feet higher than the upper elevations within the project area.

Because the proposed project includes ground disturbance and excavation of on-site soils during site preparation, archaeological materials could be disturbed during construction. The disturbance, or damage, of previously unidentified historical or archaeological resources would constitute a potentially significant impact.

Mitigation: To avoid disturbing previously unidentified historical or archaeological resources during construction, the proposed project would be required to implement mitigation measure MM-CUL-1.

MM-CUL-1: Inadvertent Discovery Provisions

In the event that any artifact, or an unusual amount of bone, shell, or non-native stone, is encountered during construction, work will be immediately stopped and relocated to another area. The contractor will stop construction within 10 meters (30 feet) of the exposure of these finds until a qualified archaeologist can be retained by GCID to evaluate the find (see 36 CFR 800.11.1 and 14 CCR 15064.5[f]). Examples of such cultural materials might include concentrations of ground stone tools such as mortars, bowls, pestles, and manos; chipped-stone tools such as projectile points or choppers;

flakes of stone not consistent with the immediate geology, such as obsidian or fused shale; a historic trash pit containing bottles and/or ceramics; or structural remains.

Residual Impact: Implementation of MM-CUL-1 would require halting work if an artifact is encountered and consultation with a qualified archeologist to determine the significance of the resource. If the resource is determined to be a significant historical or unique archaeological resource, additional measures would be taken to minimize or avoid significant effects, which may include (but are not limited to) avoidance, capping the site, deeding the site into a permanent conservation easement, or data recovery excavation. With implementation of MM-CUL-1, impacts would be considered less than significant.

CUL-3: Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less-Than-Significant Impact After Mitigation. Results of the CHRIS records search indicate that there are no known or suspected burials. The project area does not include known human remains. Although the potential is low, sediment from excavation activities associated with spur dikes and mid-channel bar excavation may contain a previously unrecorded archaeological site or human remains that could be Tribal cultural resources. The disturbance, or damage, of previously unidentified historical or archaeological resources would constitute a potentially significant impact.

Mitigation: To avoid disturbing previously unidentified historical or archaeological resources during construction, the proposed project would be required to implement mitigation measure ***MM-CUL-1: Inadvertent Discovery Provisions*** (see CUL-2).

Residual Impact: Implementation of MM-CUL-1 would require halting work if human remains are encountered and consultation with a qualified archeologist to determine the significance of the resource. If human remains are encountered during construction, the proposed project would comply with state and federal requirements regarding disposition of human remains and consultation with Native American Tribes and agencies. With implementation of MM-CUL-1, impacts would be considered less than significant.

3.3.6 Energy

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

3.3.6.1 Affected Environment

3.3.6.1.1 Environmental Setting

Due to the size of its population, California's energy consumption ranks as the second highest in the country, with an estimated total consumption of 6,882 trillion British thermal units (Btu) in 2022. Total utility-scale electric generation for California was 287,220 gigawatt-hours (GWh) in 2022, up 3.4% (9,456 GWh) from 2021. The state's energy consumption per capita, however, ranks as the fourth lowest because of its mild climate and policies related to energy efficiency (USEIA 2024). California is the seventh highest producer of energy, producing 2,152 trillion Btu in 2021. It is the nation's top producer of solar and geothermal energy and the second highest producer of biomass and hydroelectric power generation (USEIA 2024).

In 2023, California was the fourth-largest electricity producer in the nation. It is also the nation's third-largest electricity consumer and imports more electricity than any other state. In 2023, renewable resources, including hydroelectric power and small-scale solar power, supplied 54% of California's in-state electricity generation. Natural gas fueled 39%, and nuclear power fueled most of the remaining 7%. Electricity demand, usage, and production in the state is projected to increase in the near future due to population growth and other factors, including climate change (CEC 2025a).

The project area is served by Pacific Gas & Electric (PG&E) for electricity. County-level electricity consumption and generation values for 2022 are shown in Table 9.

Table 9
Electricity Consumption and Generation by County (2022)

County	Consumption (GWh)	Generation (GWh)
Butte	1,445	2,055
Glenn	495	8
Tehama	531	69

Sources:
CEC 2016, 2025b

Most of the region uses natural gas for heating. PG&E is the natural gas utility servicing the three counties within which the proposed project is located. Natural gas consumption by county is presented in Table 10.

Table 10
Natural Gas Consumption by County in Millions of Therms (2022)

County	Total Usage
Butte	26.40
Glenn	37.14
Tehama	32.83

Source:
CEC 2025c.

Gasoline is the most used transportation fuel in California, with 97% percent of all gasoline being consumed by passenger vehicles and light-duty trucks. In 2022, 13.6 billion gallons of gasoline were sold in California. Diesel fuel is the second largest source of transportation fuel used in California. In 2002, 3.6 billion gallons of diesel (including off-road diesel) were sold in California (CEC 2025a).

3.3.6.1.2 Applicable Regulations

Energy in California is regulated by a series of bills, regulations, and executive orders aimed at decreasing total energy demand and increasing the availability and production of renewable energy for all energy needs.

3.3.6.1.2.1 State of California Energy Action Plan

The California Energy Commission is responsible for preparing the state energy plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 Energy Action Plan (2008 update; CEC and CPUC 2008), which calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assisting public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouraging urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

3.3.6.1.2.2 Senate Bill 350: Clean Energy and Pollution Reduction Act

The Clean Energy and Pollution Reduction Act (SB 350), enacted in 2015, established clean energy, clean air, and greenhouse gas (GHG) reduction goals, including reducing GHG to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. The California Energy Commission is working with other state agencies to implement the bill. The bill increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. In addition, SB 350 requires California to double statewide energy efficiency savings in electricity and natural gas end use by 2030.

3.3.6.1.2.3 California Air Resources Board In-Use Off-Road Diesel Vehicle Rule

In July 2007, ARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce DPM and NOx emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. The regulation was adopted in April 2008, amended in 2011, and amended again in 2022. The regulation is applicable to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers, including vehicles that are rented or leased [rental or leased fleets]). Vehicles used solely for agriculture are exempted from this regulation.

The Off-Road Diesel Regulation is a multipronged approach to emissions controls that does the following:

- Imposes limits on idling to 5 minutes, requires a written idling policy, and requires a disclosure when selling vehicles
  - As of March 1, 2009, all medium and large fleets are required to develop a written idling policy that informs and notifies operators of the fleets' vehicles that idling must be limited to 5 consecutive minutes or less. Small fleets are not required to maintain a written idling policy but are accountable for meeting the idling limits.
- Requires all vehicles to be reported to ARB in an online reporting system
- Restricts the adding of older vehicles into fleets as of January 1, 2014
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

The 2022 amendments to the Off-Road Diesel Regulation include a staggered phase-out of Tier 0 through Tier 2 off-road engines and a restriction on new Tier 3 and Tier 4 vehicles. As of January 1, 2018, for large and medium fleets, and January 1, 2023, for small fleets, a fleet may not add a vehicle with a Tier 2 engine to its fleet; the engine tier must be Tier 3 or higher. In addition to reducing tailpipe emissions, most newer equipment meeting higher Tier standards are also more energy efficient than older models.

3.3.6.2 Impact Evaluation

ENE-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less-Than-Significant Impact. The proposed project would result in temporary energy consumption associated with the use of fossil fuels (primarily gas, diesel, and motor oil) for heavy-duty equipment, construction vehicles, haul trucks, and worker commute trips required for the construction and maintenance of the proposed project. In addition, the materials used for construction, such as rocks, also require energy to manufacture, process, and transport. Energy usage at the project site would be limited to the short-term construction activities, with minimal energy use during as-needed maintenance operations. The project site does not currently have any energy services, and the proposed project does not propose any new or extension of energy service.

Construction and operation of the proposed project would not include energy consumption that is wasteful, inefficient, or unnecessary compared to projects of a similar size and scope. Impacts would be considered less than significant, and no mitigation is required.

Mitigation: Although impacts would be less than significant and mitigation is not required, mitigation measure ***MM-AIR-1: BCAQMD Best Practices to Minimize Air Quality and GHG Impacts*** (see AIR-2) would be implemented to further reduce impacts.

Residual Impact: Implementation of MM-AIR-1 would further reduce fuel use in construction trucks by including measures such as limiting unnecessary idling to 5 minutes, and impacts would remain less than significant.

ENE-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. State and local authorities regulate energy use and consumption. The proposed project would not conflict with any applicable state or local plans related to renewable energy development or energy efficiency. At the state level, regulations such as SB 100, AB 32, and Title 24 of the California Building Standards Code promote energy conservation, reduce GHG emissions, and encourage the transition to cleaner energy sources. The proposed project would not conflict with or obstruct a local plan, such as the general plans of Tehama, Butte, or Glenn counties, for renewable energy or energy efficiency (Butte County 2023a; Glenn County 2023; Tehama County 2009). Because the proposed project does not include any permanent energy infrastructure, is temporary in nature with minimal operational energy demands, and would fully comply with state energy regulations and local policy objectives, it would not interfere with the achievement of goals in any state or county

energy plan. Therefore, there would be no impact related to renewable energy or energy efficiency plan conflicts.

3.3.7 Geology and Soils

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

3.3.7.1 Affected Environment

3.3.7.1.1 Geology and Soils

The project site is located in Butte, Glenn, and Tehama counties, in the northern section of California's Great Valley Geomorphic Province, or Central Valley. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province. Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges (Harden 1998).

NRCS soil survey data indicate that the soil units associated with the Sacramento River within the three project area counties include Water-Fluventic Haploxerepts-Oxyaquic Xerofluvents-Oxyaquic

Xerorthents complex (code 1000). The east bank is represented by Water-Fluventic Haploxerepts-Oxyaquic Xerofluvents-Oxyaquic Xerorthents complex (code 1000) and Gianella fine sandy loam (code 158) soil units. The west bank is mapped with Water-Fluventic Haploxerepts-Oxyaquic Xerofluvents-Oxyaquic Xerorthents complex (code 1000) and Columbia fine sandy loam (code CeA) soil units (NRCS 2023). Water-Fluventic Haploxerepts-Oxyaquic Xerofluvents-Oxyaquic Xerorthents complex is associated with 0% to 8% slopes. Gianella fine sandy loam is associated with 0% to 1% slopes. Columbia fine sandy loam is associated with 0% to 2% slopes (NRCS 2023). These soils series are formed from alluvium parent materials from igneous, metamorphic, and sedimentary rock and are associated with the floodplains, rivers, natural levees, drainageways, fans, or stream terrace landforms (NRCS 2023).

3.3.7.1.2 Faults and Seismicity

The project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (CDOC 2015), and no known faults cut through the local soil at the project site. The project site is not located on any active fault line or system. The nearest mapped fault is the Corning Fault, approximately 6 miles west of the project site in Tehema and Glenn counties.

3.3.7.1.3 Liquefaction

The potential for liquefaction, which is the loss of soil strength due to seismic forces, is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking. Although no specific liquefaction hazard areas have been identified in Glenn and Tehama counties (Glenn County 2023, Tehama County 2009), according to Butte County, the project area and the entire Sacramento River within Butte County is “generally high” for liquefaction potential (Butte County 2019). The project site is not within a mapped liquefaction zone per CGS maps (CNRA 2024). However, the water table of the Columbia fine sandy loam present at the project site is only 4 feet below ground surface, indicating some potential for liquefaction (NRCS 2023).

As noted, because the uplands of the project site are underlain by soils with moderate density and a relatively high water table, the upland portions of the project site may have some susceptibility to liquefaction and therefore may also be susceptible to lateral spreading. The risk of lateral spreading would be highest in areas with steep slopes, which occur throughout the east and west river banks of the project site. The project area has been identified as containing soils and water table depths susceptible to liquefaction (NRCS 2023). Additionally, the project area is within a generally high liquefaction potential zone (Butte County 2019).

3.3.7.1.4 Slope Failure and Slope Stability

Earthquakes can cause significant slope stress, potentially resulting in earthquake-induced landslides. Landslides most commonly occur in areas with steep slopes or within slide-prone geologic units that contain excessive amounts of water. Subsidence involves a sudden sinking or gradual settling and

compaction of soil and other surface material with little or no horizontal motion. Other factors that affect slope stability include site geology, climate, and human activity. The lands surrounding the project site are generally flat. The slope to the active zone of the Sacramento River is represented by engineered east and west banks with 2H:1V slopes and riprap. Where scour has occurred on the southern portion of the project area, the slopes to the river are steeper with an approximately 1H:1V slope. The west bank of Montgomery Island has experienced significant vegetation scour and erosion. The east bank of the Sacramento River has experienced significant shoreline erosion. The existing rock embankments along the East bank of the Sacramento River are more stabilized due to shoreline stabilization but still present steep slopes and were previously stabilized due to ongoing erosion. The shorelines of the project area are currently unstable and are susceptible to seismic-induced slope failure. CGS has not mapped landslide hazard zones in the project area or in its immediate vicinity (CGS 2021).

3.3.7.1.5 Soil Expansion and Subsidence

Expansive soils are high in clay content and increase and decrease in volume upon wetting and drying, respectively. The change in volume exerts stress on loads placed on these soils. The project site is mapped as having Gianella fine sandy loam and Columbia fine sandy loam, which have low expansivity (linear extensibility of 0.0% and 1.3%, respectively, through the soil column). The Sacramento River and associated banks are mapped as having Water-Fluventic Haploxerepts-Oxyaquic Xerofluvents-Oxyaquic Xerorthents complex, which has no expansivity rating (NRCS 2023). According to NRCS maps, there are no clay soils mapped within the project area, and expansive soils are therefore unlikely to be present (NRCS 2023).

There are two types of subsistence: land subsistence and hydrocompaction subsistence. Hydrocompaction subsistence occurs when a large land area settles due to oversaturation. These areas are usually composed of open-textured soils that become saturated, high in silt or clay content. Land subsistence occurs when an extensive amount of ground water, oil, or natural gas is withdrawn from beneath the ground surface. The project site is mapped as containing soils with low susceptibility to subsidence (NRCS 2023). However, subsidence occurs in Glenn County, primarily from the withdrawal of groundwater, and is considered to be a potential hazard for portions of Butte County within the Sacramento River Valley (Glenn County 2018; Butte County 2023b). Additionally, the project area is mapped as having subsidence potential in Butte County (Butte County 2023b). The steep slopes along the banks of the project site increase the risk of settlement. Soils with shallow groundwater that are prone to liquefaction, as occur at the project site, may be susceptible to settlement (NRCS 2023).

3.3.7.1.6 Erosion

Erosion is the detachment and movement of soil materials through natural processes or human activities. During the rainy months of winter the area is more prone to water erosion, whereas the

area is more prone to wind erosion during the summer. The project site exhibits existing evidence of substantial bank erosion on the east and west banks, which is threatening to erode the fish bypass channel. As the Sacramento River has flowed around the growing mid-channel gravel bar, the east and west banks of the river have experienced extensive erosion. The speed at which bank loss has occurred is accelerating and jeopardizing GCID's operations and adjacent lands to bank erosion. Since 1998, approximately 9.4 acres of upland riparian vegetation located above the OHWM of the river have been lost to bank erosion.

3.3.7.1.7 Paleontology

After European settlement, the project area and surrounding lands were developed into an agricultural region. GCID's water rights were established in 1883, and much of its operating system of nearly 1,000 miles of canals, laterals, and drains was constructed in the early 1900s. The project area has long been used for water diversions for agricultural purposes (GCID 2025b).

The Bureau of Land Management (BLM) developed a classification system based on the potential for the occurrence of significant paleontological resources in a geologic unit and the associated risk for impacts to the resource (BLM 2007). The system is summarized as follows:

> *Any rock material that contains fossils has the potential to yield fossils that are unique or significant to science. However, paleontologists consider that geological formations having the potential to contain vertebrate fossils are more sensitive than those likely to contain only invertebrate fossils. Invertebrate fossils found in marine sediments are usually not considered by paleontologists to be unique resources because the geological contexts in which they are encountered are widespread and fairly predictable. Invertebrate fossil species are usually abundant and well preserved. In contrast, vertebrate fossils are much rarer than invertebrate fossils and are often poorly preserved. Therefore, when found in a complete state, vertebrate fossils are more likely to be a significant resource than are invertebrate fossils. Thus, geologic formations having the potential to contain vertebrate fossils are considered the most sensitive. Vertebrate fossil sites are usually found in non-marine upland deposits* (BLM 2007).

The project site is situated on quaternary alluvium (USGS 2017). Alluvial deposits typically contain only invertebrate fossils (if any), and those are out of original depositional context (BLM 2007). Vertebrate fossils are considerably more likely to be significant or unique, as are fossils in their original context (BLM 2007).

3.3.7.2 Impact Evaluation

GEO-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); ii) strong seismic ground shaking; iii) seismic-related ground failure, including liquefaction; or iv) landslides?

i) and ii): **Less-Than-Significant Impact.** The project area is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, and no known surface expression of active faults is believed to cross the project site; therefore, fault rupture through the project site is not anticipated.

The proposed project does not include habitable residential, agricultural, commercial, or industrial structures. Operation of the proposed project would require as-needed maintenance trips to the project site. The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault Any impacts would be less than significant, and no mitigation is required.

iii) **Less-Than-Significant Impact.** The project area is mapped as having generally high liquefaction potential, and soil conditions susceptible to liquefaction and lateral spreading are present at the project site. The sections of the east bank with existing rock embankments would be less prone to lateral spreading because the riprap armoring provides stability. The proposed project would not exacerbate existing liquefaction hazards. As part of the proposed project, additional stabilization measures—such as spur dikes, riprap pad, and rock slope protection—would be implemented. These features are expected to enhance the resistance of riverbanks to ground failure and mitigate the risk of slope movement associated with seismic events. Importantly, the project does not include habitable structures, critical infrastructure, or public access features such as roads, utilities, or recreational facilities that would expose people to direct seismic hazards. The project is limited to bank stabilization and hydraulic improvements and, therefore, poses no risk of structural collapse or injury due to ground failure. The proposed project would be in compliance with the relevant goals and policies set forth in the general plans for Butte, Glenn, and Tehama counties. In addition, the project's purpose—to reduce erosion and enhance bank and channel stability—means that it would not increase the risk of liquefaction or related seismic hazards but rather help manage and reduce these risks in the long term. Although the project site is within a region susceptible to liquefaction and lateral spreading, the proposed project would not exacerbate existing risks, and would in fact reduce the potential for seismic-related ground failure by stabilizing vulnerable riverbanks. Impacts would be less than significant and no mitigation is required.

iv) **Less-Than-Significant Impact.** Landslide potential is influenced by physical factors, such as slope, soil, and precipitation. There are steep slopes along the river banks of the project site; however, the project site is located overall on relatively flat land with no major geologic landforms existing on or near the site that could result in a landslide event that could cause risk of loss, injury, or death. The proposed project would stabilize the banks of the shoreline and reduce erosion and would decrease the potential for slope failures and landslides. The proposed project would not result in changes that would increase the potential for slope failure or landslides. This impact would be less than significant, and no mitigation is required.

GEO-2: Would the project result in substantial soil erosion or the loss of topsoil?

Less-Than-Significant Impact After Mitigation. Construction of the proposed project would involve substantial ground-disturbing activities, including vegetation removal and clearing, grading, excavation, stockpiling, and construction of bank protection features such as spur dikes and riprap pads. These activities, especially those occurring near and below the OHWM, could expose soils to erosion processes via wind and water. Erosion risks during construction would vary depending on slope steepness and stability, vegetation cover, soil type, construction intensity, concentration of runoff, and weather conditions such as precipitation patterns. The east and west banks of the Sacramento River in the project area are already highly susceptible to erosion due to their alluvial composition and hydrologic setting. The project footprint also includes areas characterized by barren gravel and sand (particularly the east bank overbank area), which are inherently more prone to erosion and sediment transport. During construction, the proposed project could result in soil erosion and therefore, impacts would be significant.

In the long term, the project is explicitly designed to reduce and mitigate existing erosion processes. The Sacramento River in the project area has experienced accelerated erosion on both the east and west banks, threatening the structural integrity of GCID's fish screen and bypass return channel. The proposed project includes the installation of spur dikes, rock slope protection, and strategically placed riprap pads, all of which are engineered to redirect flow energy toward the center of the channel and away from vulnerable banks. Modeling demonstrates that the proposed project would reduce lateral flow velocities along the banks, encourage sediment deposition between the spur dikes, support the reestablishment of riparian vegetation, and stabilize bank geometry, returning it to conditions more representative of the river's 1998 alignment. The inclusion of vegetation-based stabilization (e.g., greenstick and wattle installation, use of locally sourced willow and cottonwood) would further aid in soil stabilization and prevent topsoil loss. The combination of hard (rock) and soft (vegetation) engineering is a best-practice approach to long-term erosion control in fluvial systems. Because the project is designed to reduce existing erosion, it would not result in substantial erosion or loss of topsoil during operations. Instead, it would provide substantial erosion control benefits.

Mitigation: Because impacts during construction activities could be significant, mitigation measures MM-GEO-1 and MM-GEO-2 would be implemented to reduce the potential for erosion:

MM-GEO-1: Obtain NPDES Coverage

GCID will obtain a NPDES permit to regulate construction-related stormwater at the project site if the project disturbs one or more acres of soil. GCID will comply with all NPDES permit conditions.

MM-GEO-2: Implement Erosion and Spill Control Measures

- *Fencing, sandbags, tarps, or other forms of barriers will be placed around staging areas to prevent debris from entering the water.*
- *If debris reaches the water, personnel in work boats will expeditiously retrieve the debris for proper handling and disposal.*
- *All debris and trash will be collected and disposed of in appropriate waste containers by the end of each construction day. Discharge of hazardous materials into the project site is prohibited.*
- *All construction-related equipment will be inspected daily and maintained in good working order to minimize the potential for hazardous waste spills. Current hazardous material spill prevention and cleanup plans will be maintained on site. Hydraulic attachments will be placed on plywood and covered with plastic or a comparable material prior to the onset of rain to prevent run-on and runoff.*
- *Construction material that could wash or blow away will be covered every night and during any rainfall event.*
- *Adequate erosion control supplies will be kept on site during all construction activities to ensure that materials are kept out of waterbodies.*

Residual Impact: With implementation of MM-GEO-1 and MM-GEO-2, the potential for substantial soil erosion would be reduced and impacts would be less than significant.

GEO-3: Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less-Than-Significant Impact. The project area includes steep, erodible riverbanks composed of unconsolidated alluvial soils, which have already been subject to substantial bank retreat and slope instability due to altered flow conditions in the Sacramento River. This erosion has created a condition where the risk of localized bank failure and potential landslides is currently elevated. Notably, photographs and field assessments show extensive vertical bank faces and evidence of sloughing and scour, particularly on both the east bank (adjacent to Deseret Farms) and the west bank (Montgomery Island).

Rather than exacerbating these risks, the proposed project is specifically designed to stabilize these unstable slopes and mitigate the potential for future landslides or bank collapses. Project components such as spur dikes, rock slope protection, and riprap pads are engineered to redirect erosive flow energy away from the banks and toward the center of the channel. These features will reduce hydraulic undercutting, which is a key driver of slope instability in this setting. Although landslide potential exists under current conditions, the project's stabilization features are expected to significantly reduce this hazard. No lateral spreading risks are anticipated to be triggered by the proposed project due to its low-impact foundation work and shallow construction methods. Except for the mid-channel bar excavation activities, which would occur in the middle of the Sacramento River, the project does not involve significant excavation, groundwater withdrawal, or new structural loading that could lead to soil settlement or subsidence. Liquefaction potential exists but due to the nature of shallow, non-saturated construction, the proposed project would not introduce new elements that increase this risk.

Although portions of the project site are currently unstable and at risk of landslides or bank failure, the proposed project is designed to correct and mitigate these existing hazards. As such, rather than creating instability, the proposed project would yield a beneficial effect by reinforcing vulnerable bank segments. Therefore, impacts would be less than significant, and no mitigation is required.

GEO-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact. Soils underlying the project site do not exhibit expansive qualities. The proposed project would not increase the risk of expansivity. Therefore, there would be no impact related to expansive soils.

GEO-5 Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The proposed project would not produce wastewater and would not involve the construction or modification of any septic tanks or alternative wastewater disposal systems. As such, the proposed project would have no impact.

GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. There are no known unique geological or paleontological resources in the project area. Alluvial deposits, such as those at the project site, typically contain only invertebrate fossils (if any), and those are out of original depositional context. Vertebrate fossils are considerably more likely to

be significant or unique. Due to its geomorphological history, the project area is not likely to contain any fossils other than invertebrate fossils that are in a redeposited context. Therefore, it is very unlikely that any fossil that is unique or scientifically significant would be present at the project site. Accordingly, the proposed project would have no impact related to directly or indirectly destroying a unique paleontological resource or site or unique geologic features.

3.3.8 Greenhouse Gas Emissions

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b.	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

3.3.8.1 Affected Environment

3.3.8.1.1 Environmental Setting

Global climate change results from GHG emissions caused by several activities, including fossil fuel combustion, deforestation, and land use change. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which otherwise escapes to space. The most prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Global warming potential (GWP) is a measure of how much a given mass of GHG contributes to global warming relative to CO_2. Using each pollutant's GWP, emissions of CO_2, CH_4, and N_2O can be converted into CO_2 equivalents (CO_2e). In this analysis, GWP factors from the Intergovernmental Panel on Climate Change (IPCC) *Sixth Annual Report (AR6)* (IPCC 2021) are used. These include 298 for N_2O, 29.8 for fossil derived CH_4, and 27.2 for non-fossil CH_4.

Emissions of GHGs are responsible for the enhancement of the greenhouse effect and contribute to what is termed "global warming," a trend of unnatural warming of the Earth's natural climate. Increased concentrations of GHGs in the Earth's atmosphere increase the absorption of radiation and further warm the lower atmosphere. This process increases evaporation rates and temperatures near the surface. Climate change is a global problem, and GHGs are global pollutants, unlike criteria pollutants.

Recent environmental changes linked to global warming include rising temperatures, shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (CCCC 2018; USGCRP 2018; IPCC 2021). In California, an assessment of climate change impacts predicts that temperatures will increase between 5.6°F to 8.8°F by 2100, based on low and high global GHG emission scenarios (CCCC 2018). Predictions of long-term negative environmental impacts in California include worsening of air quality problems; an increase in the frequency of heat waves; a reduction in municipal water supply from the Sierra snowpack; sea level rise; an increase in

wildfires; damage to marine and terrestrial ecosystems; and an increase in the incidence of infectious diseases, asthma, and other human health problems (CCCC 2018).

3.3.8.1.2 Applicable Regulations

3.3.8.1.2.1 Assembly Bill 1493: State Standards Addressing Vehicle Emissions

The California Greenhouse Gas Vehicle Emission Standards (AB 1493), enacted on July 22, 2002, required ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. At the time, ARB estimated that the regulation would reduce GHG emissions from the light-duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030.

3.3.8.1.2.2 California Executive Order S-3-05

Executive Order (EO) S-3-05, signed by then-Governor Schwarzenegger on June 1, 2005, established the following GHG reduction targets for California: 1) by 2010, reduce GHG emissions to 2000 levels; 2) by 2020, reduce GHG emissions to 1990 levels; and 3) by 2050, reduce GHG emissions to 80% below 1990 levels. EO S-3-05 also called for the California Environmental Protection Agency to prepare biennial reports on the following: 1) progress made towards achieving these goals; 2) impacts to California from global warming; and 3) mitigation and adaptation plans to combat these impacts. The most recent of these Climate Action Team reports was completed in December 2023 (CAT 2023).

3.3.8.1.2.3 California's Renewables Portfolio Standard

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's Renewables Portfolio Standard is an ambitious renewable energy standard. The Renewables Portfolio Standard requires that 33% of total retail sales of electricity be procured from eligible renewable sources by the end of 2020. Renewables Portfolio Standard requirements were conservatively excluded from emission calculations associated with electricity use. On April 12, 2011, then-Governor Brown signed SB 2, which requires one-third of the state's electricity to come from renewable sources by 2020. The legislation increases California's former 20% renewable portfolio standard target for 2010 to a 33% renewable portfolio standard by December 31, 2020. Resolution 10-23 adopted by ARB found that the proposed regulation to adopt the 33% renewable standard was expected to reduce GHG emissions from California's utility sector by at least 12 metric tons (MT) CO_2e per year by 2020 (ARB 2010). In October 2015, SB 350 was signed into law. SB 350 requires a 50% increase in California's renewable portfolio standard and a doubling of energy efficiency by 2030.

3.3.8.1.2.4 Assembly Bill 32: California Global Warming Solutions Act of 2006 with Updates (2008, 2014, 2017, and 2022)

The California Global Warming Solutions Act of 2006, widely known as AB 32, required ARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. ARB was directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. AB 32 also required ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

On December 11, 2008, ARB adopted the AB 32 Scoping Plan (ARB 2008), which set forth the framework for meeting the state's GHG reduction goal set by EO S-3-05. On October 20, 2011, ARB adopted the final cap-and-trade regulation. ARB also approved an adaptive management plan that monitors the progress of reductions and recommends corrective actions if progress is not as planned or there are unintended consequences in other environmental areas (e.g., concentration of local criteria pollutants).

In 2014, ARB adopted an update to Scoping Plan with new strategies and recommendations. The 2008 and 2014 Scoping Plan Update (ARB 2014) require that reductions in GHG emissions come from virtually all sectors of the economy and be accomplished from a combination of policies, regulations, market approaches, incentives, and voluntary efforts. These efforts target GHG emission reductions from cars and trucks, electricity production, fuels, and other sources. In 2017 the Scoping Plan was updated with the state's strategy to reduce GHG emissions by 40% from 1990 levels by 2030 (ARB 2017). In 2022, the Scoping Plan was again updated and designed to achieve targets for carbon neutrality and reduce GHG emissions by 85% below 1990 levels no later than 2045 (ARB 2021).

3.3.8.1.2.5 Senate Bill 32: California Global Warming Solutions Act of 2006

Approved in 2016, SB 32 extends the climate targets adopted by California under AB 32, which required California to reduce GHG emissions to 1990 levels by 2020. The California Global Warming Solutions Act of 2006 designates ARB as the state agency charged with monitoring and regulating sources of emissions of GHG. This requires ARB to approve a statewide GHG emissions limit equivalent to the statewide GHG emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG emissions reductions. ARB is required to ensure that statewide GHG emissions are reduced to 40% below the 1990 level by 2030.

3.3.8.1.2.6 Assembly Bill 197: State Air Resources Board

AB 197, enacted in 2016, is a companion law to SB 32 and requires ARB to report regularly to the state legislature on its progress in implementing the state's climate and air pollution-related policies.

The laws also require California officials to create a committee to oversee the state's climate programs and require regulators to take stronger action to cut pollution from refineries and other facilities, especially in low-income and minority communities.

3.3.8.1.2.7 Senate Bill 97 and Amendments: CEQA Greenhouse Gas Emissions

SB 97, enacted in 2007, directed the Governor's Office of Planning and Research (OPR) to develop CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions." In December 2009, OPR adopted amendments to Appendix G of the CEQA Guidelines (Environmental Checklist), which created a new resource section for GHG emissions and indicated criteria that may be used to establish the significance of GHG emissions.

3.3.8.1.2.8 Governor's Executive Order S-01-07 (January 2007) and Low Carbon Fuel Standards (approved April 2009, effective April 2010)

EO S-01-07 was enacted by then-Governor Schwarzenegger on January 18, 2007. The executive order mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and that a Low Carbon Fuel Standard for transportation fuels be established for California.

3.3.8.1.2.9 Senate Bill 350: Clean Energy and Pollution Reduction Act

The Clean Energy and Pollution Reduction Act (SB 350), enacted in 2015, established clean energy, clean air, and GHG reduction goals, including reducing GHG to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. The California Energy Commission is working with other state agencies to implement the bill. This law established clean energy, clean air, and GHG reduction goals. The bill increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030. In addition, SB 350 requires California to double statewide energy efficiency savings in electricity and natural gas end use by 2030.

3.3.8.1.2.10 Senate Bill 100: California Renewables Portfolio Standard Program

California Renewables Portfolio Standard Program (SB 100) enacted in 2018 sets a goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero carbon resources (such as solar and wind energy) that do not emit climate-altering GHG by 2045. SB 100 updates the state's Renewables Portfolio Standard to ensure that by 2030 at least 60% of California's electricity is renewable. It requires the California Energy Commission, California Public Utilities Commission (CPUC), and ARB to use programs under existing laws to achieve 100% clean electricity and issue a joint policy report on SB 100 by 2021 and every 4 years thereafter.

3.3.8.1.2.11 Executive Order B-30-15

In April 2015, EO B-30-15 established an interim, statewide GHG emissions reduction target of 40% below 1990 levels by 2030 and directed the legislature to develop legislation to address that target.

This interim target was established in order to ensure the state meets the EO S-3-05 target of reducing GHG emissions to 8% below 1990 levels by 2050. To facilitate achievement of this goal, EO B-30-15 called for an update to ARB's Scoping Plan. ARB approved the 2022 Climate Change Scoping Plan, which sets the state targets for carbon neutrality and reduce GHG emissions by 85% below 1990 levels no later than 2045 (ARB 2021).

3.3.8.1.2.12 Executive Order B-55-18

Signed in September 2018 by Governor Brown, EO B-55-18 requires the state to achieve statewide carbon neutrality by 2045 and to achieve and maintain net negative GHG emissions thereafter. The EO calls on ARB to address this goal in future scoping plans, which affect other major sectors of California's economy, including transportation, agriculture, development, industrial, and others.

3.3.8.1.2.13 Local

The air districts of Tehama and Butte counties have issued CEQA guidance documents (TCAPCD 2015; BCAQMD 2024) for the evaluation of GHG impacts from a proposed project. GCAPCD does not have a published CEQA handbook.

3.3.8.2 Impact Evaluation

In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies (CEQA Guidelines Section 15064.4[b][3]).

In December 2018, the California Natural Resources Agency clarified several points regarding the method for determining GHG impacts in CEQA documents. CEQA Guidelines Section 15064.4 includes the following provisions as summarized by OPROPR 2018):

- *Lead agencies must analyze the greenhouse gas emissions of proposed projects* (CEQA Guidelines Section 15064.4[a]).
- *The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions* (CEQA Guidelines Section 15064.4[b]).
- *Lead agencies may rely on plans prepared pursuant to Section 15183.5 (Plans for the Reduction of Greenhouse Gases) in evaluating a project's greenhouse gas emissions* (CEQA Guidelines Section 15064.4[b][3]).

The TCACPD has set a CO_2e screening criterion of 900 MT per year (TCAPCD 2015). BCAQMD and GCACPD have not set similar screening thresholds or criteria for GHG emissions. The 900-MT threshold set by TCACPD is based on annual operations.

GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-Than-Significant Impact. Phase 1 construction is anticipated to occur over one or two construction seasons. Phase 2 construction is anticipated to occur over approximately two construction seasons between 5 to 15 years after Phase 1 or between 2031 and 2046. GHG emissions from construction of both Phase 1 and Phase 2 of the proposed project would be short-term and would not generate GHG emissions that exceed the screening threshold of the applicable air district. While GHG emissions would only be generated within 2 to 4 construction seasons over the next 20 years, GHG emissions were quantified and annualized over a conservatively assumed 20-year life of the proposed project. The annualized estimate of GHG emissions in units of metric ton CO_2e per year as a result of the proposed project are presented in Table 11, where they are compared to the TCAPCD screening threshold of 900 MT CO_2e/year.

Table 11
Estimated Greenhouse Gas Emissions Screening Threshold Comparison

GHG Emissions	Project Construction Emissions		Annualized GHG Emissions (MT CO_2e/yr)	Threshold Evaluation	
	lb CO_2e/day	Total MT CO_2e		TCAPCD (MT CO_2e/yr)	Exceeds thresholds?
CO_2e	2678.77	443.5	22.175	900	No

Source: TCAPCD 2015

The proposed project's estimated annualized GHG emissions are expected to be 22.2 MT CO_2e/year, which is well below the applicable TCAPCD screening threshold. Emissions from operations of the proposed project were not quantified because the expected ongoing activities at the facility consist of periodic as-needed maintenance, which would produce negligible emissions of GHGs. Accordingly, impacts related to GHG emissions from construction and operation of the proposed project would have a less than significant impact on the generation of GHG emissions, and no mitigation is required.

GHG-2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact. Existing plans and policies aimed at reducing GHG emissions apply to a variety of sources such as residential, transportation, agriculture, water, waste management, and industry. There are no adopted GHG-related plans, policies, or regulations that are directly applicable to the proposed project, which is a bank erosion remedy that would not result in land use changes, population growth, or new development of any kind. As described in the previous subsection, the

proposed project would not exceed the TCACPD GHG emission thresholds. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation to reduce GHG emissions, and there would be no impact.

3.3.9 Hazards and Hazardous Materials

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

3.3.9.1 Affected Environment

3.3.9.1.1 Project Area Hazardous Material Sites

The Hazardous Waste and Substances Sites List (Cortese List) is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. DTSC's EnviroStor database

provides DTSC's component of Cortese List data. In addition to the EnviroStor database, the CDWR's Geotracker database provides information on regulated hazardous waste facilities in California, including underground storage tank (UST) cases and non-UST cleanup programs, including Spills-Leaks-Investigations-Cleanups sites, Department of Defense sites, and Land Disposal program. According to the California Department of Water Resources (CDWR) GeoTracker database (CDWR 2024) and the DTSC's EnviroStor database (DTSC 2024), there are no active hazardous waste cleanup sites within 1,000 feet of the project site. The nearest hazardous waste cleanup sites are in Hamilton City, located approximately 7 miles south of the project site.

3.3.9.1.2 Airports

The closest airport from the project site is the Chico Municipal Airport, located approximately 10 miles east of the project site. The project site is not located within the Butte County Airport Land Use Compatibility Plan (Butte County Airport Land Use Commission 2017).

3.3.9.1.3 Sensitive Receptors

Sensitive receptors are groups that would be more affected by air, noise, light pollution, pesticides, and other toxic chemicals than others. This includes infants, children under 16, elderly over 65, athletes, and people with cardiovascular and respiratory diseases. High concentrations of these groups would include daycares, residential areas, hospitals, elder care facilities, schools, and parks. The project site is located within an agricultural and rural setting; there are no sensitive receptors near the project site. The project site is located more than 1,200 meters (3,900 feet) from the nearest residential receptors, located due west of the project site at the corner of County Road 2 and County Road V. Additional sensitive receptors are located at the Capay School, approximately 2,700 meters (8,800 feet) due west of the project site, and at increasingly distant locations beyond. Hamilton High School in Hamilton City is approximately 5,600 meters (18,500 feet) south from the project site. Additional sensitive land uses, such as churches or parks, are located at greater distances.

3.3.9.1.4 Emergency Response Plans

The Office of Emergency Management for Butte County, the Office of Emergency Services (OES) for Glenn County, and the OES for Tehama County are the three county emergency management agencies that apply to the project site. As such, they are the lead agencies that are required to fulfill each county's requirements under the California Emergency Services Act (Government Code Section 8550). They are responsible for coordinated response, recovery, and mitigation efforts during an emergency or disaster within the project area.

3.3.9.1.5 Wildfire Hazards

The project site is not within any fire hazard severity zones (FHSZs; CAL FIRE 2025b). There are no wildlands within the project area, and wildland fires do not pose a risk to the project site. For further information, please refer to Section 3.3.20.

3.3.9.1.6 Applicable Regulations

3.3.9.1.6.1 Resource Conservation and Recovery Act

The federal Resource Conservation and Recovery Act (RCRA) established a regulatory system to track hazardous wastes from the time of generation to final disposal, frequently described as "cradle-to-grave." The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous wastes. RCRA's provisions give state regulatory agencies authority to regulate solid and hazardous wastes. In California, DTSC is authorized to implement RCRA in lieu of USEPA.

3.3.9.1.6.2 U.S. Department of Transportation Hazardous Materials Regulations (49 Code of Federal Regulations 100–185)

The U.S. Department of Transportation (DOT) Hazardous Materials Regulations cover all aspects of hazardous materials packaging, handling, and transportation. Under DOT regulations, a hazardous material is "a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under Section 5103 of federal hazardous materials transportation law (49 USC 5103)." Potentially applicable parts include Part 171 ("General Information, Regulations and Definitions") and Part 172 ("Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans").

3.3.9.1.6.3 Hazardous Waste Control Law

The Hazardous Waste Control Law (California Health and Safety Code [HSC], Division 20, Chapter 6.5) is the basic hazardous waste law for California. The Hazardous Waste Control Law implements the federal RCRA cradle-to-grave waste management system in California, although this program regulates more materials as hazardous wastes than the federal program. California hazardous waste regulations can be found in 22 CCR 4.5, "Environmental Health Standards for the Management of Hazardous Wastes." The program is administered by DTSC.

3.3.9.1.6.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act (Division 7 of the California Water Code) is the primary state regulation that addresses water quality standards. Under the act, the State Water Resources Control Board (SWRCB) has the ultimate authority over water rights and water quality policy. The act also established nine RWQCBs to oversee water quality on a day-to-day basis at the regional level. The state and regional boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Jurisdictional resources in the project area are expected to be under the jurisdiction of the RWQCB. Under oversight by USEPA, SWRCB and RWQCB have the responsibility for establishing regulatory standards and objectives for water quality, developing Total Maximum Daily Loads (TMDLs) for impaired waterbodies, and issuing National Pollutant Discharge Elimination System

(NPDES) permits. The proposed project may require waste discharge requirements (WDRs) if waters on site are considered jurisdictional.

3.3.9.1.6.5 Occupational Health and Safety, Including 29 Code of Federal Regulations

The California Division of Occupational Safety and Health (Cal/OSHA) and Occupational Safety and Health Administration (OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. Pursuant to the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety, contained in 29 Code of Federal Regulations (CFR). These regulations set standards for safe workplaces and work practices, including standards relating to hazardous material handling. Cal/OSHA assumes primary responsibility for developing and enforcing state workplace safety regulations. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in 29 CFR. Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in 8 CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Material Safety Data Sheets be available to employees and that employee information and training programs be documented.

3.3.9.1.6.6

3.3.9.1.6.7 Tehama County

The following local policy pertaining to hazards and hazardous materials is included in the Land Use Element of the *Tehama County General Plan Update 2009–2029* (Tehama County 2009):

- ***Implementation Measure OS-1.3a:*** *Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.*

3.3.9.1.6.8 Glenn County

The following local policy pertaining to hazards and hazardous materials is included in the Conservation and Sustainability Element of the *Glenn County General Plan* (Glenn County 2023):

- ***Policy COS 5-5:*** *Ensure that special waste including hazardous materials, tires, medications, infectious waste, asbestos waste, construction waste, and electronic waste are recycled and disposed of in a manner that is safe for the environment, residents, and employees.*

3.3.9.2 Impact Evaluation

HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

1 and 2: **Less-Than-Significant Impact.** The proposed project would not involve the long-term or large-scale transport, use, or disposal of hazardous materials and would not meet the thresholds described above requiring the preparation of a HMMP under the proposed project. However, as with most construction projects, the use of certain routine hazardous substances such as diesel fuel, motor oil, hydraulic fluids, lubricants, and other petroleum-based products would be necessary during the short-term construction period to operate and maintain heavy equipment and vehicles. These materials would be handled in limited quantities and stored temporarily at construction staging areas, in accordance with applicable regulations and best practices. The routine use of these materials during construction introduces a potential for accidental spills or releases. However, such events would be limited in scale and duration and are not reasonably expected to pose a significant risk to human health or the environment when managed correctly. Impacts would be less than significant.

Mitigation: While impacts would be less than significant and mitigation is not required, mitigation measure ***MM-GEO-2: Implement Erosion and Spill Control Measures*** (see GEO-2) would be implemented to further reduce impacts.

Residual Impact: Implementation of MM-GEO-2 would further reduce impacts regarding the creation of a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and impacts would remain less than significant.

HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The proposed project would not result in the emissions of hazardous materials during operation. In addition, the project site is not located within a quarter mile of an existing or proposed school. There would be no impact.

HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The proposed project is not located on a site listed as a hazardous materials site pursuant to Government Code Section 65962.5, commonly referred to as the "Cortese List". A review both the CDWR's Geotracker and DTSC's EnviroStor websites confirmed that there are no contaminated groundwater and hazardous materials sites in the project area. Any known hazardous materials sites are located at adequate distances from the project site such that they would be of no concern to present a worker hazard for construction crews. The proposed project does not involve the disturbance of known contaminated soil or groundwater, and construction activities will remain within previously surveyed and evaluated areas. As a result, there is no reasonably foreseeable potential for the project to encounter or mobilize contaminants that would create a public or environmental hazard. There would be no impact.

HAZ-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The project site is not located within an airport land use plan or within two miles of an airport. The Chico Municipal Airport, the nearest public airport to the project site, is located approximately 10 miles east of the project site. Construction of the proposed project would not be a safety hazard for people working or residing in the area as there are no residences nearby and agricultural lands with few on-site workers border the project site. There would be no impact.

HAZ-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The proposed project would not include any elements that would act as physical barriers or disturb any roadways in a way that would impede or physically interfere with emergency or hazards response. Under operation of the proposed project, GCID would undertake appropriate inspection and maintenance measures, such as repair and replacement of damaged or dislodged rock slope protection, spur dikes, and bank protection, to control adverse changes in bed elevation or adverse river alignments that threaten to outflank or jeopardize the safety, integrity, or operability of the GF or fish return channel. Specific responsibilities regarding the bank protection measures would include maintaining signage and buoys, locating and marking navigation hazards within the Sacramento River, removing snags, and maintaining the riprap surfaces of project elements. Inspection activities would be conducted on an ongoing basis to identify any required maintenance, repair, replacement, or rehabilitation needs and to ensure the proper care and efficient operation of

the various project elements. Therefore, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan during construction or operation. There would be no impact.

HAZ-7: Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Less-Than-Significant Impact. The project site and the surrounding lands consist of the Sacramento River, agricultural lands, and existing infrastructure. The proposed project does not include any residential components or employment centers, nor would it require any additional employees to be stationed permanently at the project site on a daily basis. Any additional workers on site during construction would be short term and temporary. As discussed in further details in Section 3.3.20, any impacts from directly or indirectly exposing people or structures to injury or death involving a wildland fire would be considered less than significant, and no mitigation is required.

3.3.10 Hydrology and Water Quality

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

3.3.10.1 Affected Environment

3.3.10.1.1 Climate and Precipitation

The climate in the region of the proposed project is characterized as Mediterranean with cool, wet winters and dry, hot summers. California's water resources are affected by affected by variability and unpredictability, as precipitation is the primary source of water supply and it varies from year to year, geographically, and depending on the time of the year. On average, California receives approximately 200 million acre-feet per year in precipitation, and about two-thirds evaporates, percolates into the ground, or is absorbed by plants, leaving approximately 71 million acre-feet in average annual runoff (Water Education Foundation 2024). The total volume of water received from precipitation varies dramatically between dry and wet years. For example, in 2011, which was a wet year, California received approximately 250 million acre-feet of precipitation while in 2014, a critical year, California received approximately 100 million acre-feet (USBR 2024). Additionally, most of the

precipitation occurs between November and March in the northern portion of the state (CDWR 2023). Annual average precipitation in the proposed project region historically amounts to an average of 21 to 22 inches per year in a normal year. Precipitation runoff brings higher flows in the winter and lower flows in the summer.

3.3.10.1.2 Surface and Stormwater

The California Regional Water Quality Control Board (CRWQCB) implements basin plans that characterize the region's natural water quality, water quality issues, and potential beneficial uses. The basin plans also define programs to achieve the water quality objectives (CRWQCB 2019). The Central Valley Region of the CRWQCB implements the basin plan for the project area. The proposed project is within the Sacramento River Basin, which covers 27,210 square miles and includes the entire area drained by the Sacramento River (CRWQCB 2019). The Sacramento River is California's largest river, accounting for 31% of the state's surface water runoff. Draining the inland slopes of the Cascade, Coast, and Klamath mountain ranges, the Sacramento River watershed encompasses an area of 27,000 square miles. Fed by the snowmelt from Mount Shasta, the river flows south past Dunsmuir into Shasta Lake. Below Shasta Dam, it flows through Redding and Red Bluff and west of Chico. It is joined by Butte Creek near Colusa, the Feather River outside of Sacramento, and the American River at the center of Sacramento. From there it flows southwesterly until joined by the San Joaquin River near Pittsburg. The mingled waters of the two rivers then flow west into San Pablo Bay and ultimately San Francisco Bay (USACE 2024). The proposed project is within the Sacramento Lower Thomes Hydrologic Unit.

The project area includes portions of the Sacramento River that are rural. Pollutant types that exist in this region come from a mix of urban, rural, agricultural, and undeveloped land uses in the vicinity of the proposed project and upstream. Runoff from urban areas can contain pollutants such as sediment, oil, grease, heavy metals, pesticides, and debris. Agricultural pollutants can include contaminants from chemical pesticides, fertilizers, and livestock. Rural residences can potentially contribute pollutants through faulty sewage disposal systems. There is no stormwater infrastructure at the project site.

3.3.10.1.3 Flood Hazards

Butte, Glenn, and Tehama counties maintain Flood Insurance Rate Maps, as required by the Federal Emergency Management Agency (FEMA). These Flood Insurance Rate Maps indicate the potential of flooding for various locations and designate the project site as being within "Zone A Area" in each of the three counties, which indicates a special flood hazard area that is subject to inundation by the 1 percent annual chance of flood (FEMA 2010, FEMA 2011a, FEMA 2011b). The portion of the project site within Tehama County is zoned Primary Floodplain (PF).

Upstream dam failures could cause flooding in the project area because it is within the dam inundation zones of two major dams, the Shasta and Whiskeytown dams (Davids and West Yost 2018). Failure of either of the dams would cause extensive flooding along the Sacramento River and would cause flooding in the project area. California SB 92 (2017) requires emergency action plans for all dams, except those classified as "low hazard".

The project area is not protected by a levee system along the Sacramento River. However, the project site is adjacent to the Glenn-Colusa Canal to the west. GCID is responsible for the Glenn-Colusa Canal. If the Glenn-Colusa Canal were to fail it could cause inundation of communities in Glenn County but would not impact the project site (Glenn County 2018).

3.3.10.1.4 Groundwater

The project area is within the boundaries of Butte, Glenn, and Tehama counties in a rural area, with agricultural fields on both sides of the river. Within Butte County, the principal water bearing units in the Sacramento Valley portion of Butte County are Tuscan, Laguna, Riverbank, and Modesto Formations (Butte County 2004). Within Tehama County, the principal water bearing units include the Tuscan, Tehama, Riverbank, and Modesto Formations (CDM and CDWR 2003). Within Glenn County, the principal water bearing units include the Tuscan, Tehama, Riverbank, and Modesto Formations (Davids and West Yost 2018). Development in these areas increases surface runoff and reduces groundwater quality. Natural recharge occurs along streams, rivers, and through direct infiltration of precipitation through surficial and permeable portions of these water-bearing materials.

The proposed project is located in the Corning Groundwater Subbasin and Vina Groundwater Subbasin within the Sacramento River hydrologic region (CDWR 2024). The Sustainable Groundwater Management Act was enacted in 2014 and requires governments and water agencies in high and medium priority basins to form Groundwater Sustainability Agencies (GSAs). GSAs are responsible for managing groundwater sustainably and adopting Groundwater Sustainability Plans (GSPs). Corning Groundwater Subbasin and Vina Groundwater Subbasin are designated as "high" priority, and a GSA has been formed for both basins. A GSP for the Corning Groundwater Subbasin is currently incomplete and a GSP for the Vina Groundwater Subbasin was completed in 2021 (Vina and Rock Creek Reclamation District GSAs 2021).

3.3.10.1.5 Applicable Regulations

3.3.10.1.5.1 Clean Water Act

The CWA is the principal statute governing water quality on a national level. The CWA sets water quality standards that states use to regulate discharge of pollutants into the nation's waters. The statute employs a variety of regulatory and non-regulatory tools to reduce pollutant discharges into waterways. It mandates permits for wastewater and stormwater discharges, regulates publicly owned

works that treat municipal and industrial wastewater, requires states to establish site-specific water quality standards for navigable bodies of water, and regulates other activities that affect water quality. USEPA has delegated responsibility for implementation of portions of the CWA in California, including water quality control planning and programs, to SWRCB and nine RWQCBs.

Important applicable sections of the CWA are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Act. Certification is provided by the RWQCB.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by USACE.

3.3.10.1.5.2 National Flood Insurance Program

The National Flood Insurance Program, administered by FEMA, requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year flood zone. FEMA is responsible for preparing maps delineating these areas.

3.3.10.1.5.3 California Fish and Game Code

Section 5650 of the CFGC prohibits discharge of harmful materials to waters of the state. It is unlawful to deposit in, permit to pass into, or place where it can pass into California waters, any petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or residuary product of petroleum; any carbonaceous material or substance; any refuse, liquid or solid, from a refinery, gas house, tannery, distillery, chemical works, mill, or factory of any kind; any sawdust, shavings, slabs, or edgings; any factory refuse, lime, or slag; any *Cocculus indicus*[4]; or any substance or material deleterious to fish, plant, mammal, or bird life. CFGC 5655 requires that parties responsible for polluting waters of the state pay for removal costs and environmental damages.

CFGC 1602 requires an entity to notify CDFW prior to commencing any activity that may do the following:

- Substantially divert or obstruct the natural flow of any river, stream, or lake.
- Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake.

[4]*Cocculus indicus* is prohibited based on the practice of grinding up the roots of certain *Cocculus* plants (most commonly Yucca plants) and spread them in the water to "stun" fish for collection.

- Deposit or dispose of debris, waste, or other materials containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

According to CDFW, the notification requirement applies to any river, stream, or lake, including those that are dry for periods of time (ephemeral/episodic) as well as those that flow year-round (perennial) and is interpreted by CDFW to include ephemeral streams, desert washes, and watercourses with a subsurface flow. After notification, if CDFW determines the activity may substantially adversely affect an existing fish and wildlife resource, CDFW has the responsibility for preparation of a Streambed Alteration Agreement, in consultation with the project proponent.

3.3.10.1.5.4 Sustainable Groundwater Management Act

The 2014 Sustainable Groundwater Management Act (SGMA) provides jurisdictions with a structure for local and regional-level management of California's groundwater resources. SGMA required the formation of GSAs from local and regional authorities in California's high- and medium-priority basins and subbasins. Relative to GSA formation, SGMA assigns different roles to DWR, SWRCB, local agencies, and counties. SGMA implementation is now well underway. GSAs across the state are actively managing their basins in accordance with approved or conditionally approved GSPs. Per SGMA requirements, GSAs must achieve sustainability within 20 years of GSP adoption, with ongoing annual reporting and 5-year updates to demonstrate progress.

3.3.10.2 Impact Evaluation

HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less-Than-Significant Impact. The proposed project involves construction activities within and adjacent to the Sacramento River, including work on riverbanks and the channel. Construction activities such as grading, excavation, vegetation removal, rock placement, and the use of heavy equipment including track-mounted dozers, tractors/loaders/backhoes, excavators, graders, scraper, cranes, an approximately 40-foot by 80-foot floating spud barge, assist vessels (20-foot to 50-foot length), forklifts, generators, welders, air compressors, and paving equipment have the potential to result in accidental releases of contaminants and sediment.

During construction, clearing of vegetation would occur on both riverbanks and within the east bank easement to allow equipment access. In addition, excavating and grading activities are also anticipated. During these ground disturbing construction activities, new or increased existing erosion and temporary degradation of surface water quality due to an increase in turbidity may occur. However, after the completion of construction, riparian vegetation would be replanted, and temporary access roads and staging areas would be restored to pre-construction conditions. Specifically, after construction riparian tree species and associated shrub species would be planted

between the spur dikes and in bank areas above rock slope protection to stabilize soils and reduce erosion. Therefore, impacts would be less than significant.

Moreover, the proposed project is expected to improve long-term surface water quality. Upon completion of the proposed project, reduction in flow velocities along the existing east and west banks and increases in the velocity in the river channels at the end of the spur dikes are anticipated, thereby reducing the erosion that can contribute to poor water quality. Specifically, the scour hole fill and west bank stabilization would result in straighter flow focused down the center of the channel and directed towards the mid-channel bar. Subsequently, erosion along the banks to either side of the mid-channel bar would be reduced, and sediment transport would be anticipated to move closer to the center of the channel, with higher velocities and a projected deeper channel adjacent to the mid-channel bar such that gravel and sediment deposits no longer accumulate there. The pattern of higher velocities and sediment transport in the center of the river channel would more closely resemble the hydraulic and sediment transport/geomorphic conditions in the reach downstream of the GF prior to its construction, resulting in more natural surface water flow conditions. Additionally, erosion along the east and west banks would be slowed, reducing the overall sediment load to the Sacramento River and improving the long-term quality of surface water flows in the project area.

The proposed project would not generate any type of wastewater, nor would it involve discharge of water to any surface or groundwater sources during operation. As such, there would be no discharge directly associated with project operation that could impact water quality standards. Therefore, the impact would be less than significant regarding the violation of any water quality standards or waste discharge requirements or otherwise substantially degrading surface or ground water quality.

Mitigation: Although impacts would be less than significant and mitigation is not required, the mitigation measures ***MM-GEO-1: Obtain NPDES Coverage*** and ***MM-GEO-2: Implement Erosion and Spill Control Measures*** would be implemented to further reduce potential impacts to surface or ground water quality.

Residual Impact: Implementation of MM-GEO-1 and MM-GEO-2 would further reduce potential impacts to surface or groundwater quality during construction, and impacts would remain less than significant.

HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Impact. The proposed project would not utilize any groundwater supplies or impede sustainable groundwater management of the basins in the project area. The proposed project would not entail the construction of any impervious materials and would not alter or otherwise substantially affect

runoff at the project site or groundwater recharge. As such, the proposed project would not impact groundwater supplies or impede management, and there would be no impact.

HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in a substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?

Less-Than-Significant Impact. The proposed project involves the construction of bank stabilization and hydraulic enhancement features along the Sacramento River, including spur dikes, riprap pads, and scour hole fill. Although construction activities would involve temporary vegetation clearing, grading, and ground disturbance, these would not result in permanent changes to surface drainage patterns or the creation of impervious surfaces. Short-term increases in surface runoff, erosion, or turbidity may occur during active construction. However, these impacts would be temporary and localized. In addition, following construction, riparian vegetation would be replanted and access roads and staging areas would be restored to pre-construction conditions. These post-construction restoration measures would promote long-term soil stability and water quality protection.

Completion of the proposed project would result in a reduction in flow velocities along the existing east and west banks and an increase in the velocity in the river channels at the end of the spur dike. The scour hole fill and west bank stabilization would result in straighter flow focused down the center of the channel and directed towards the mid-channel bar. Subsequently, erosion along the banks to either side of the mid-channel bar would be reduced, and sediment transport would be anticipated to move closer to the center of the channel, with higher velocities and a projected deeper channel adjacent to the mid-channel bar such that gravel and sediment deposits no longer accumulate there. Additionally, erosion along the east and west banks would be slowed, reducing the overall sediment load to the Sacramento River and reducing the long-term erosion and siltation on- or off-site. The operation of the proposed project would therefore cause a reduction in erosion and siltation and serve as a benefit to on- and off-site erosion and siltation. Finally, by directing high flows away from unstable banks and reducing backwater effects, the proposed project would decrease the likelihood of localized flooding and ponding along the Sacramento River banks.

The proposed project would also not create any new impervious surfaces or stormwater discharge points. As such, it would not contribute additional surface runoff that could overwhelm existing or planned stormwater drainage systems, nor would it introduce substantial sources of polluted runoff.

The absence of impervious surfaces and long-term structural drainage features ensures no significant alteration to site hydrology.

The proposed project would temporarily disturb the site during construction. In the long term, it would reduce erosion, improve flood flow conveyance, and enhance river channel stability. The proposed project would not substantially alter existing drainage patterns in a manner that results in flooding, exceed stormwater system capacities, or degrade water quality. Therefore, impacts related to drainage, erosion, runoff, and flood flow alteration would be less than significant.

Mitigation: Although impacts would be less than significant and mitigation is not required, the mitigation measures ***MM-GEO-1: Obtain NPDES Coverage*** and ***MM-GEO-2: Implement Erosion and Spill Control Measures*** would be implemented to further reduce potential impacts to drainage, erosion, runoff, and flood flow alteration during construction.

Residual Impact: Implementation of MM-GEO-1 and MM-GEO-2 would further reduce potential impacts to drainage, erosion, runoff, and flood flow alteration during construction, and impacts would remain less than significant.

HYD-4: Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The project area is not near the coast and is outside the influence of large waterbodies. Consequently, seiche and tsunami events would not affect the project site. Implementation of the proposed project would help reduce the potential for flooding within the project area by reestablishing more natural hydraulic flow conditions. There would be no source of pollutants on site during the flood season. Therefore, no impact from flood hazard, tsunami, or seiche causing an increased risk for release of pollutants due to inundation would occur.

HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The proposed project is within the Sacramento River Region Basin Plan implemented by the CRWQCB (CRWQCB 2019). The Sacramento River Region Basin Plan requirements would be followed through the conditions of the proposed project's 401 Water Quality Certification. In addition, the proposed project is not expected to violate any water quality standards. A complete GSP exists for the Vina Groundwater Subbasin, and an incomplete GSP exists for the Corning Groundwater Subbasin, both of which underlie the project site. The proposed project would not interfere with the goals of the GSPs. Overall, the proposed project would not conflict with or obstruct existing water quality or groundwater management plans. There would be no impact.

3.3.11 Land Use and Planning

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

3.3.11.1 Affected Environment

The proposed project is situated within a rural area of three counties: Butte, Glenn, and Tehama. The project area is dominated by the Sacramento River and surrounding agricultural lands. In unincorporated Butte County, grazing and farmland are the dominant land use, accounting for almost 60% of all land in the county (Butte County 2023b). Similarly, agriculture is the primary dominant land use in Glenn County (Glenn County 2023). In Tehama County, the existing land use pattern consists primarily of a combination of upland agricultural, exclusive agricultural, and public lands (Tehama County 2009). The project site includes the Sacramento River and its riverbanks and an unpaved gravel access road. As shown in Figure 6, the project site is zoned for a variety of agricultural designations and floodplain. Project site lands in Butte County are zoned as AG-80 and AG-160, which are agricultural zones that indicate that the minimum size of a parcel of land in that zone is 80 acres and 160 acres, respectively. Project site lands in Glenn County are zoned as AG-20 (General Agricultural), AG-40 (Intensive Agricultural), and AG-80 (Intensive Agricultural) and indicate that the minimum size of a parcel of land in that zone is 20, 40, and 80 acres, respectively. Project site lands within Tehama County are all situated on the Sacramento River and are zoned Primary Floodplain (PF). Adjacent agricultural lands in Tehama County are zoned for agriculture. According to the relevant general plans, the project site is planned for Agriculture (AG) (Butte County), Intensive Agriculture (Glenn County), and Valley Floor Ag/Capay (Tehama County).

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Figure 6
Project Site Zoning
Glenn County Irrigation District

3.3.11.2 Impact Evaluation

LAN-1: Would the project physically divide an established community?

No Impact. The project site is located in an agricultural area in rural Butte, Glenn, and Tehama counties. The proposed project would not physically divide any established communities, nor does it include the permanent improvement of roads, trails, or paths that could be considered a connectivity network or that would divide an established community. There would be no impact.

LAN-2: Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The project site is zoned for agricultural uses and floodplain. Construction of the proposed project would not develop new sources of water that would support any new housing or new permanent population growth. Therefore, no impacts to land use would occur. Construction and operation of the proposed project is compatible with the current land use in the vicinity. Therefore, the proposed project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impact.

3.3.12 Mineral Resources

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☐	☒
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

3.3.12.1 Affected Environment

3.3.12.1.1 Environmental Setting

Historically, the region along the Sacramento River had extensive mining operations that capitalized on its rich mineral resources. The Sacramento River was significantly impacted by historical gold mining and modern gravel mining activities, which modified the river and its tributaries and resulted in substantial changes to the region's hydrology and ecosystem (NOAA Fisheries 2022).

According to CDOC's Mineral Land Classification map, the western portion of the project site that is within Glenn and Tehama counties are located in Mineral Land Classification of Concrete-Grade Aggregate Resources (CDOC 2022). The project site is not zoned for mineral extraction or preservation.

3.3.12.1.2 Applicable Regulations

In 1975, the California Surface Mining and Reclamation Act (SMARA) was enacted to regulate surface mining operations, ensuring that environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA requires that the State Geologist classify land into mineral resource zones (MRZs) according to the known or inferred mineral potential of the land. MRZs delineated by the California Department of Mines and Geology (CDMG) identify the presence and significance of mineral deposits within the project area. In general, areas subject to pressures of urbanization are zoned by the CDMG, whereas areas outside of urbanization are not zoned. MRZ categories defined by the CDMG include the following:

- **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence
- **MRZ-2:** Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence
- **MRZ-3:** Areas containing mineral deposits, the significance of which cannot be evaluated from available data

- **MRZ-4:** Areas where available information is inadequate for assignment to any other
- **MRZ-SZ:** Areas containing unique or rare occurrence of rocks, minerals, or fossils that are of outstanding scientific significance

3.3.12.2 Impact Evaluation

MIN-1: Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

MIN-2: Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

1 and 2: **No Impact.** The CGS Division of Mines and Geology has classified a portion of the project site as an MRZ under SMARA. However, the project site is not zoned for mineral extraction or preservation and has no known history of mineral extraction occurring on site. Furthermore, the proposed project would not result in the loss of any identified mineral resources on site or within the vicinity of the project site. Therefore, construction and operation of the proposed project would not result in the loss of availability of a known mineral resource or a locally important mineral resource recovery site. There would be no impact.

3.3.13 Noise

Would the project result in:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b.	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c.	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.3.13.1 Affected Environment

3.3.13.1.1 Fundamentals of Noise and Groundborne Vibration

Sound is what we hear and is defined as the energy of a vibrating object transmitted by pressure waves through a medium, such as air or water, to the human ear. Noise is most simply defined as unwanted sound. A given noise may be more or less tolerable depending on the duration exposure, as well as the time of day that the noise occurs. Sound is measured in decibels (dB) and accounts for variations such as frequency and amplitude, using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel [dBA]). The community noise equivalent level (CNEL) measures the cumulative 24-hour noise exposure, considering not only the variation of the A-weighted noise level but also the duration and the time of day of the noise. Various state and local agencies have adopted CNEL as the measure of community noise, including the State Department of Aeronautics and the California Commission on Housing and Community Development.

Groundborne vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Vibrating objects can radiate their energy through the ground upon contact; if the object is large or close enough to an observer, ground vibrations can be perceived. As such, environmental impact analyses typically study vibration as it relates to building damage and human annoyance. However, because ground vibration generated by human activities typically attenuates rapidly from the source of vibration, human vibration issues are usually confined to short distances, such as 500 feet or less from the source (FHWA 2006). Vibration consists of rapidly fluctuating

motions with an average motion of zero. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. The accepted unit for measuring PPV in the United States is inches per second.

3.3.13.1.2 Project Area Setting

The project site is located on the Sacramento River in a rural, agricultural area, approximately 2 miles west of the community of Capay and 4 miles north of the town of Hamilton City. There are no sensitive receptors, including residences, near the project site. The Capay School in Orland is approximately 2,700 meters (8,800 feet) due west of the project site and Hamilton High School in Hamilton City is approximately 5,600 meters (18,500 feet) south of the project site. Although much of the project area is composed of large swaths of agricultural land, discrete small communities, and remote rural residences, major noise generators include roadway travel, farming vehicles and equipment, and industrial operations. Due to the seasonal nature of the agricultural industry, there are also extended periods of time when little to no noise is generated at the project site, followed by short-term periods of intensive mechanical equipment usage and corresponding noise generation.

3.3.13.1.3 Applicable Regulations

3.3.13.1.3.1 Federal

OSHA has established acceptable occupational noise exposure levels (29 CFR 1910.95). These regulations state that employees will not be exposed to occupational noise levels greater than 90 dB without adequate hearing protection. If occupational noise levels exceed 85 dB, the employer must establish a hearing conservation program as described under 29 CFR 1910.95(c–o). For occupational noise exposure levels greater than 90 dB, the daily period of noise exposure must be decreased from 8 hours, as described under 29 CFR 1910.95(b).

The USEPA Office of Noise Abatement and Control was established to coordinate federal noise control activities and issued the Noise Control Act of 1972 (42 USC 4901 et seq.), establishing programs and guidelines to identify and address the effects of noise on public health and welfare and the environment. USEPA determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government, and responsibilities for regulating noise control policies were transferred to state and local governments in 1982.

3.3.13.1.3.2 State

The State of California General Plan Guidelines, published by OPR, provide guidance for the acceptability of projects within areas that are exposed to specific noise levels. For areas zoned for industrial, manufacturing, utilities, and agricultural land uses, the normally acceptable level of community noise exposure is less than 75 CNEL, with 70 to 80 CNEL considered conditionally acceptable (OPR 2017). The guidelines also present adjustment factors that may be used to arrive at

noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

For the protection of fragile, historic, and residential structures from groundborne vibration, Caltrans recommends a threshold of 0.2 inch per second PPV for normal residential buildings and 0.08 inch per second PPV for old or historically significant structures (Caltrans 2020).

3.3.13.1.3.3 Regional and Local

3.3.13.1.3.3.1 Butte County

According to the Noise Element in the Health and Safety Element of the *Butte County General Plan 2040* (Butte County 2023a), the most prevalent noise source in Butte County is roadway traffic, which is a constant source of noise compared to the intermittent sounds from the county's railroads and airports (Butte County 2023b).

Policy HS-P1.9 directs that the following standard construction noise control measures will be required at construction sites to minimize construction noise impacts:

a. Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

b. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.

c. Use quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

3.3.13.1.3.3.2 Glenn County

According to the *Glenn County General Plan* (Glenn County 2023), noise in Glenn County is generated by a variety of sources, including but not limited to agricultural operations and activities; vehicle traffic, including automobiles, trucks, motorcycles, aircraft, and trains; restaurants/bars; industrial operations; and other businesses, including motorsports activities.

The *Glenn County General Plan* Policy N-1-7 requires "construction activities to comply with best practices to reduce noise exposure to adjacent sensitive receptors." Under Action N-1d, suggested best practices for control of construction noise include the following:

- *Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, will be limited to between the hours of 7:00 a.m. and 7:00 p.m. Construction staging areas will be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.*

- *Neighbors located adjacent to the construction site will be notified of the construction schedule in writing.*
- *The construction contractor will designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator will be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator will be conspicuously posted at the construction site.*
- *At all times during project grading and construction, stationary noise-generating equipment will be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.*
- *Unnecessary idling of internal combustion engines will be prohibited for a duration of longer than five minutes.*
- *Construction staging areas will be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.*

3.3.13.1.3.3.3 Tehama County

The Noise Element of the *Tehama County General Plan* states that the primary noise sources in Tehama County consist of highway and local traffic on County roads, as well as commercial and industrial uses, airports, and railroad operations (Tehama County 2009). State highways account for nearly 70% of vehicle travel in the county, and SR 99 and Interstate 5 are located approximately 8 miles to the east and west of the project site, respectively. Implementation Measure N-2.4a restricts construction activities to the hours as determined by Tehama County's Noise Control Ordinance unless an exemption is received from the County to cover special circumstances. Special circumstances may include emergency operations or short-duration construction. Implementation Measure N-2.4b requires that all internal combustion engines that are used in conjunction with construction activities be muffled according to the equipment manufacturer's requirements.

3.3.13.2 Impact Evaluation

NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less-Than-Significant Impact. Construction of the proposed project would involve temporary noise sources, predominantly from use of off-road equipment such as track-mounted dozers, tractors/loaders/backhoes, excavators, graders, scraper, forklifts, generators, welders, air compressors, and paving equipment. The project site is not located near any sensitive receptors and

is adjacent to agricultural lands and accustomed to noises associated with farming equipment and agricultural operations. The proposed project would comply with the Butte, Glenn, and Tehama County Noise Control Ordinances. Operational maintenance activities would be on an as-needed basis with routine monitoring performed by existing staff and would not generate substantial new noise. Any construction noise impacts would be temporary, of short-duration, and not substantial, and, therefore, less than significant. No mitigation is required.

NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less-Than-Significant Impact. Construction generated groundborne vibration and noise from the proposed project would primarily be emitted from the use of off-road construction equipment such as track-mounted dozers, tractors/loaders/backhoes, excavators, graders, scraper, forklifts, generators, welders, air compressors, and paving equipment. The project site is located in an area dominated by agricultural production. Agricultural production commonly includes the regular use of off-road equipment and ground-disturbing activities. During temporary construction, project-related construction activities would not vary substantially from the baseline conditions of groundborne vibration and noise routinely experienced on neighboring properties. Impacts would be less than significant, and no mitigation is required.

NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is not located within an airport land use plan. The Chico Municipal Airport, the nearest public airport, is located approximately 10 miles to the east of the project site. Moreover, the proposed project does not involve the development of residences or require the presence of additional, permanent, on-site staff. There would be no impact.

3.3.14 Population and Housing

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.3.14.1 Affected Environment

3.3.14.1.1 Environmental Setting

The project site and immediate surroundings are used for GCID irrigation operations and agricultural operations. Properties at and within immediate vicinity of the project site are designated and zoned for agricultural uses by Butte and Glenn counties. The portion of the project site in Tehama County is zoned Primary Floodplain. The closest community to the proposed project is Capay, about 2 miles west of the project site in unincorporated Glenn County. According to the U.S. Census Bureau, Capay had an estimated population of 1,358 with approximately 452 housing units in 2022 (Census Reporter 2024a). The community of Hamilton City, also in unincorporated Glenn County, is approximately 4 miles to the south. According to the U.S. Census Bureau, Hamilton City had an estimated population of 2,191 with approximately 797 housing units in 2022 (Census Reporter 2024b).

3.3.14.1.2 Applicable Regulations

The Housing Element is one of nine State-required components of every city and county general plan in California. Unlike the other elements, the Housing Element must be updated on an 8-year schedule and be approved by the State's Department of Housing and Community Development. The housing element describes how the jurisdiction plans to accommodate forecasted population growth, requisite housing needs, public service demands, and environmental protection. The applicable general plans for the project area typically support higher-density infill development and build-out of existing developed areas with a commitment to preserve agricultural land and their economic importance through policies such as "discourage agricultural land conversion demands" (Land Use Element Goal LU-1) (Tehama County 2009). Butte and Tehama counties both require a 300-foot buffer or setback between lands zoned for agriculture and potential new residential developments (while allowing for discretionary approval per existing Williamson Act contracts).

3.3.14.2 Impact Evaluation

POP-1: Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

POP-2: Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

1 and 2: **No Impact.** The proposed project involves the construction of spur dikes, installation of rock and riprap, excavation and fill activities, and vegetation replanting along the Sacramento River to restore the geomorphic and hydraulic conditions of the Sacramento River, preserve the original design objectives and current function of the GF to provide sufficient water surface elevations at GCID's fish screening facility and pumping plant, and maintain safe fish passage and boat navigation through the GF. The proposed project would not encourage population growth directly or indirectly. No housing, businesses, habitable structures, or new roads would be built, nor would any be removed; implementation of the proposed project would not result in displacement of people or existing housing. Therefore, there would be no impact.

3.3.15 Public Services

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?		☐	☐	☐	☒
Police protection?		☐	☐	☐	☒
Schools?		☐	☐	☐	☒
Parks?		☐	☐	☐	☒
Other public facilities?		☐	☐	☐	☒

3.3.15.1 Affected Environment

3.3.15.1.1 Fire Protection

The project site would be served by three fire protection districts/agencies according to the three counties it falls within: Capay Fire Protection District in Orland, Glenn County (Glenn County Planning and Public Works 2010); Butte County Cooperative Fire Agencies serving the unincorporated areas of Butte County (Butte County 2024a); and Tehama County Fire Department under a joint Cooperative Fire Protection Agreement with the California Department of Forestry and Fire Protection (CAL FIRE) (Tehama County Fire Department 2024). Additionally, the Hamilton City Fire Protection District covers the areas surrounding the town of Hamilton City, including a mutual aid agreement with Butte County Fire, the Capay Volunteer Fire Department, and Ord Bend Fire Department (8 miles south of Hamilton City) (County of Glenn LAFCo 2014).

3.3.15.1.2 Police Protection

The project site would be served by three police protection districts/agencies according to the three counties it falls within. The Butte County Sheriff's Office patrol division patrols unincorporated areas of Butte County, from the valley floor to the mountains of the Sierra Nevada. The Designated Area Deputy team provides focused patrol and enforcement of laws such as rural and agricultural crime (Butte County 2024b). The Glenn County Sheriff is responsible for law enforcement services in the unincorporated areas of Glenn County and within the City of Willows (County of Glenn 2024). The patrol division of the Tehama County Sheriff's Office is responsible for providing 24-hour law enforcement service throughout the unincorporated areas of Tehama County (Tehama County Sheriff's Office 2024).

3.3.15.1.3 Schools

Public school services are provided throughout the three counties of the project area by 14 school districts in Butte County, 8 school districts in Glenn County, and 5 school districts in Tehama County. The closest schools to the project site are in Glenn County: Capay School in Orland, located approximately 2,700 meters (8,800 feet) due west of the project site, and Hamilton High School in Hamilton City, approximately 5,600 meters (18,500 feet) south of the project site.

3.3.15.1.4 Parks

The three counties of the project area (Butte, Glenn, and Tehama counties) provide countless federal, state, regional, county, and city parks; recreation areas; national forests; and wildlife refuges. The development and maintenance of these parklands are performed by various federal, state, regional, and local agencies. The nearest park to the project site is Hamilton City Park, which is located approximately 4 miles south of the project site and is owned and maintained by Glenn County.

3.3.15.1.5 Landfills

The nearest landfill to the project site is the Glenn County Landfill Site, located approximately 17 miles west of the proposed project.

3.3.15.1.6 Applicable Regulations

3.3.15.1.6.1 California Fire Code

The California Fire Code includes regulations for emergency planning, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Fire safety requirements include building materials and particular types of construction and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

3.3.15.2 Impact Evaluation

PUB-1: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities?

No Impact. The proposed project would not require new or altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for public services in the project area. The proposed project involves the construction of spur dikes, installation of rock and riprap, excavation and fill activities, and vegetation replanting along the Sacramento

River to restore the geomorphic and hydraulic conditions of the Sacramento River, preserve the original design objectives and current function of the GF to provide sufficient water surface elevations at GCID's fish screening facility and pumping plant, and maintain safe fish passage and boat navigation through the GF. The proposed project would not result in an increase of population that would require additional school facilities or other public amenities; therefore, there would be no impact.

3.3.16 Recreation

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b.	Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.3.16.1 Affected Environment

3.3.16.1.1 Environmental Setting

The project site is located on the Sacramento River and its banks and has historically been utilized for water supply management and irrigation operations. GCID's only diversion from the Sacramento River is at the Hamilton City Pump Station, just south of the project site. Agricultural lands surround the project site and greatly contribute to the area's rural and open space character. The project site is not generally known to be used for public recreation, and there is no formal public access to the Sacramento River or shoreline at the project site. However, occasional public boat navigation on the Sacramento River through the 1-mile project site does occur. There are countless federal, state, regional, county, and city parks; recreation areas; national forests; and wildlife refuges in the three counties (Butte, Glenn, and Tehama) of the project area. The development and maintenance of these parklands are performed by various federal, state, regional, and local agencies. The nearest park to the project site is the Glenn County Hamilton City Park, approximately 4 miles south of the project site.

3.3.16.1.2 Applicable Regulations

3.3.16.1.2.1 Tehama County General Plan

The following local policy pertaining to recreation is included in the Economic Development and Open Space elements of the *Tehama County General Plan* (Tehama County 2009):

- ***Policy ED-7.1:*** *The County will continue to preserve Tehama County's natural resources including: agriculture, timberlands, agriculture, timberlands, water and water quality, wildlife resources, minerals, natural resource lands, recreation lands, scenic highways, and historic and archaeological resources. The protection of natural resources is of the utmost importance and*

promoting business expansion, retention, and recruitment should complement and enhance the natural resources while reducing negative impacts.

- ***Policy OS-9.1:*** *The County will strive for the protection and enhancement of resource lands for the continued benefit of agriculture, timber, grazing, recreation, waterfowl, wildlife habitat, watersheds, and quality of life.*
- ***Policy OS-9.4:*** *The County will actively promote outdoor recreation opportunities such as agri-tourism, nature-tourism, and environmental learning tourism.*

3.3.16.1.2.2 Glenn County General Plan

There following local policies and action pertaining to recreation are included in the Agricultural and Conservation and Sustainability elements of the *Glenn County General Plan* (Glenn County 2023):

- ***Policy AG 3-3:*** *Low-intensity recreational uses may be permitted on agricultural lands as long as they do not interfere with the principal use of land for agricultural purposes. Examples include hunting, fishing, horseback riding, hiking, agritourism, and exhibitions of working farms or ranches.*
- ***Policy AG 4-1:*** *Recognize the value of agricultural lands for countywide biodiversity, soil health, waterfowl habitat, recreation, watershed management, fire abatement, and for groundwater recharge.*
- ***Policy COS 1-1:*** *Preserve open space for conservation, agricultural, and recreation uses, consistent with the Land Use Element and the Land Use Map.*
- ***Policy COS 3-1:*** *Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Butte Creek.*
- ***Policy COS 3-2:*** *Recognize that retention of natural areas is important to maintaining adequate populations of wildlife that support recreation and hunting, open space, economic and environmental objectives.*
- ***Action COS-6g:*** *Coordinate with the California Department of Fish and Wildlife to identify adversely impacted aquatic habitat within the County and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to rivers, lakes, reservoirs, and streams.*

3.3.16.2 Impact Evaluation

REC-1: Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. Neither construction nor operation of the proposed project would increase the use of or demand for existing neighborhood and regional parks or other recreation facilities. No population growth will result from the proposed project. Therefore, there would be no impact.

REC-2: Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed project does not include the construction or expansion of any recreational facilities and would not result in increased demand for recreational facilities. No housing or population growth would result from the proposed project that could result in accelerated substantial physical deterioration of any such facilities. Therefore, there would be no impact.

3.3.17 Transportation

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b.	Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?	☐	☐	☒	☐
c..	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d.	Result in inadequate emergency access?	☐	☐	☐	☒

3.3.17.1 Affected Environment

3.3.17.1.1 Environmental Setting

The project site is bound by agricultural farmland plots and undeveloped riverbank. On the project site there is an existing access road on the east side of the east bank of the project site and an existing gravel access road loosely parallels the bank around the exterior of Montgomery Island. There are no State or interstate highways in the immediate vicinity; I-5 is the nearest highway and is located approximately 8.5 miles west of the project site. The Chico Municipal Airport, the nearest public airport to the project site, is located approximately 10 miles to the east. There is no rail, public transit, or pedestrian and bicycle facilities in the project area.

3.3.17.1.2 Applicable Regulations

3.3.17.1.2.1 Caltrans

Traffic analyses in the state of California are guided by policies and standards set at the state level by Caltrans and local jurisdictions. Caltrans policies are applicable to the proposed project and are summarized in Caltrans's *Guide for the Preparation of Traffic Impact Studies*, which provides a summary of goals and policies (Caltrans 2002). Per the Caltrans guidebook, the appropriate level of traffic analysis is determined by the nature of a project, highway conditions, and forecasted traffic. If a project meets the following criteria, this provides a starting point for determining whether a Traffic Impact Study is needed:

- The project would generate over 100 peak-hour trips assigned to a state highway facility.

- The project would generate 50 to 100 peak-hour trips assigned to a state highway facility and affected state highway facilities are experiencing noticeable delay, approaching unstable traffic flow conditions (Level of Service [LOS] C or D).
- The project would generate one to 49 peak-hour trips assigned to a state highway facility, and: 1) affected state highway facilities are experiencing significant delay with unstable or forced traffic flow conditions (LOS E or F); 2) the potential risk for a traffic incident is significantly increased (e.g., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points); or 3) the project would cause changes in local circulation networks that impact a state highway facility (e.g., direct access to state highway facility, a non-standard highway geometric design).

3.3.17.1.2.2 Senate Bill 743

SB 743, signed by Governor Brown in 2013, is intended to better align congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions. SB 743 has set the stage for moving away from LOS, which measures delay to motorists, to VMT as the metric to evaluate transportation network performance and land use and transportation planning decisions through CEQA. Specifically, SB 743 required OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts.

In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the CEQA Guidelines Section implementing SB 743. Under the updated CEQA Guidelines, the CEQA analysis must consider the amount and distance of automobile travel attributable to a project. OPR issued a Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR Technical Advisory; OPR 2018), which provides general guidance on VMT analyses in the absence of regional guidance and defines automobiles as on-road passenger vehicles, specifically cars and light trucks. Other relevant considerations may include the effects of the project on transit and non-motorized travel. SB 743 also amended congestion management law to allow cities and counties to opt out of LOS standards within certain infill areas. Transportation impacts related to air quality, noise, and safety must still be analyzed under CEQA where appropriate (PRC 21099[b][3]). Under PRC 21099, automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, will not be considered a significant impact on the environment (*Citizens for Positive Growth & Preservation v. City of Sacramento*).

3.3.17.2 Impact Evaluation

TRA-1: Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less-Than-Significant Impact. The proposed project involves the construction of spur dikes, installation of rock and riprap, excavation and fill activities, and vegetation replanting along the Sacramento River to support and maintain the GCID's water conveyance facilities. No roads would be constructed as a result of the proposed project; the existing gravel access road on the east bank of the project site would be widened to a minimum of 40 feet to accommodate construction vehicles. Trucks would be used to transport construction equipment to and haul construction waste from the sites. Construction workers and personnel would access the project area almost exclusively by personal vehicles. Due to the limited scale of construction and low number of construction workers associated with this project, truck and vehicle trips associated with construction mobilization and demobilization would be minimal and generally consistent with normal use of road facilities in the project area. Operational traffic consists of as-needed maintenance trips, which would not represent an increase from existing conditions. There would be no substantial adverse effect to existing roadways in the project area.

The proposed project would not affect a program, plan, ordinance, or policy addressing the circulation system. Construction associated with the proposed project would be restricted to the project site, and it would not intersect any public roadways nor pedestrian or bicycle paths. No road closures or detours would be necessary. Any construction-related impacts to local roadways would be temporary, and there would be no impacts to the surrounding transportation network. There is no population growth associated with the proposed project; therefore, there is no anticipated increase of road use under the proposed project. As such, the proposed project would not increase the demand for any changes to congestion management programs or interfere with existing level of service standards during the operational phase. Impacts would be less than significant, and no mitigation is required.

TRA-2: Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?

Less-Than-Significant Impact. CEQA Guidelines Section 15064.3(b) describes specific considerations for evaluating a project's transportation impacts and notes that VMT is the most appropriate measure of transportation impacts consistent with SB 743. SB 743 creates a process to change the way that transportation impacts are analyzed under CEQA and requires OPR to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. CEQA Guidelines Section 15064.3 defines VMT as the amount and distance of automobile travel, specifically for cars and light trucks, attributable to a project (OPR Technical Advisory, p. 4. [OPR 2018]).

Consistent with this Technical Advisory, VMT impacts for the proposed project would be less than significant if any one of the identified screening criteria outlined below are met:

1. **Small Projects:** The proposed project generates fewer than 110 vehicle trips per day.
2. **Low-VMT Areas:** The proposed project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15% or more below the regional average.
3. **Major Transit Stop:** The proposed project is located in a Transit Priority Area or within 0.5 mile of a major transit stop[5] or high-quality transit corridor[6] and satisfies all of the following:
    a. Has a Floor Area Ratio of greater than 0.75
    b. Does not include more parking for use by residents, customers, or employees than other typical nearby uses, or more than required by the City
    c. Is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency)
    d. Does not replace affordable residential units with a smaller number of moderate- or high-income residential units
4. **Affordable Residential Development:** The proposed project must be 100% affordable residential development in an infill location.

Based on similar construction projects in the area, construction activities resulting from proposed project would generate as many as 50 trips per day for equipment mobilization, material delivery, and worker commuting. Once operational, there would be expected to be minor increases in truck or vehicle trips for maintenance of the spur dikes, rock revetment, riprap pads, and scour hole, but only minor increases (1 to 5 trips per day) from baseline conditions would be expected. Based on this, the proposed project meets the criteria for Small Projects. Therefore, a VMT analysis is not required.

Because construction and operation of the proposed project would require a minimal number of trips per day, the impact is less than significant, and mitigation is not required.

[5] CEQA Guidelines Section 21064.3 defines a "major transit stop" as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during morning and afternoon peak commute times.

[6] CEQA Guidelines Section 21155(b) defines a "high quality transit corridor" as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

TRA-3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The proposed project does not involve geometric roadway design features or propose incompatible uses. No additional roads would be constructed as a result of the proposed project. There would be no impact.

TRA-4: Would the project result in inadequate emergency access?

No Impact. The proposed project does not propose new roadway design features or permanent alterations to any roadways that would affect existing emergency access. No road closures or detours are anticipated as part of the construction phase. The operational phase of the proposed project would have no effect on roadways or emergency access. Therefore, the proposed project would not result in inadequate emergency access, and there would be no impact.

3.3.18 Tribal Cultural Resources

Would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?		☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency will consider the significance of the resource to a California Native American tribe.		☐	☒	☐	☐

3.3.18.1 Affected Environment

This section describes existing Tribal cultural resources within the project area and analyzes how the proposed project may affect those resources. Tribal cultural resources are defined in PRC 21074 as follows:

- A site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is listed or eligible for listing in the California Register of Historic Resources (CRHR), or in a local register of historical resources as defined in PRC 5020.1(k); or
- A resource determined by the lead agency to be significant pursuant, after considering the significance of the resource to a California Native American Tribe.

AB 52, enacted in 2016, establishes a formal role for California Native American Tribes in the CEQA process and promotes the involvement of California Native American Tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their culture. AB 52 requires consideration of Tribal cultural resources, which are defined as a property, landscape, or object that is of cultural value to a Tribe and is eligible for the CRHR or a local historic register (or is determined by the lead agency to be a Tribal cultural resource). Under the updated guidelines, Tribes requesting consultation under AB 52 must be notified of a

project when it is initiated and can request consultation within 30 days, after which the lead agency must begin consultation within 30 days of the request.

Project information and a letter requesting information on whether the Tribe requests consultation on the proposed project was provided to the Colusa Indian Community Council of the Cachil Dehe Band of Wintun Indians (Co) on June 17, 2025 (Anchor QEA 2025a). GCID received a request for additional details from the Colusa Tribe – Cachil Dehe Band of Wintun Indians on July 9, 2025 (Colusa Tribe 2025). Anchor QEA, on behalf of GCID, responded to the request for additional information on July 9, 2025 (Anchor QEA 2025b). No further correspondence has occurred.

3.3.18.2 Impact Analysis

TRI-1a: Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

Less-Than-Significant Impact After Mitigation. As described in Section 3.3.5, records maintained by the CHRIS Northeast Information Center indicate that the project area has been previously surveyed for cultural resources. No site, feature, place, cultural landscape, sacred place, or object has been recorded within the project area. No resources are present that are listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources. Previously unrecorded archaeological resources or human remains could constitute Tribal cultural resources. However, the potential to encounter archaeological resources is low, as described in Section 3.3.5. Although the potential is low, native sediments may contain a previously unrecorded archaeological site or human remains that could be Tribal cultural resources. The disturbance, or damage, of previously unidentified historical or archaeological resources would constitute a potentially significant impact.

Mitigation: To avoid disturbing previously unidentified historical or archaeological resources during construction, the proposed project would be required to implement mitigation measure ***MM-CUL-1: Inadvertent Discovery Provisions*** (see CUL-2).

Residual Impact: Implementation of MM-CUL-1 would require halting work if an artifact is encountered and consultation with a qualified archeologist to determine the significance of the resource. If the resource is determined to be a significant historical or unique archaeological resource, additional measures would be taken to minimize or avoid significant effects, which may include (but are not limited to) avoidance, capping the site, deeding the site into a permanent

conservation easement, or data recovery excavation. With implementation of MM-CUL-1, impacts would be reduced to less than significant.

TRI-1b: Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency will consider the significance of the resource to a California Native American tribe.

Less-Than-Significant Impact After Mitigation. There are no known sites, features, places, or cultural landscapes that have been determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC 5024.1(c) in the project area. Previously unrecorded archaeological resources or human remains could potentially constitute Tribal cultural resources. However, potential to encounter archaeological resources is low, as described in Section 3.3.5. Although the potential is low, native sediments may contain a previously unrecorded archaeological site or human remains that could be Tribal cultural resources. Therefore, because the proposed project includes disturbance of soil, if archaeological materials or remains are present in previously undisturbed native sediments, they could potentially be disturbed during construction. The disturbance, or damage, of previously unidentified archaeological materials or remains would constitute a potentially significant impact.

Mitigation: To avoid disturbing previously unidentified historical or archaeological materials or remains during construction, the proposed project would be required to implement mitigation measure ***MM-CUL-1: Inadvertent Discovery Provisions*** (see CUL-2).

Residual Impact: Implementation of MM-CUL-1 would require halting work if an artifact is encountered and consultation with a qualified archeologist to determine the significance of the resource. If the resource is determined to be a significant historical or unique archaeological resource, additional measures would be taken to minimize or avoid significant effects, which may include (but are not limited to) avoidance, capping the site, deeding the site into a permanent conservation easement, or data recovery excavation. With implementation of MM-CUL-1, impacts would be reduced to less than significant.

3.3.19 Utilities and Service Systems

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

3.3.19.1 Affected Environment

3.3.19.1.1 Water Supply

Water supply in the project area comes primarily from surface and groundwater. GCID operates and maintains the Hamilton City Pump Station, its only diversion from the Sacramento River, within the project area, just south of the project site. The project site is located in the Corning Groundwater Subbasin and Vina Groundwater Subbasin within the Sacramento River hydrologic region (CDWR 2021). The Tehama County Flood Control and Water Conservation District (Tehama County FCWCD) and the Corning Subbasin Groundwater Sustainability Agency have been the GSAs for the Corning Subbasin since 2017. The Tehama County FCWCD serves as the GSA for the Tehama County portion of the subbasin, and the Corning Subbasin GSA (which is composed of multiple agencies) serves as the GSA for the Glenn County portion of the subbasin (Corning Subbasin GSA and Tehama County FCWCD 2024). The Vina Subbasin is managed by two GSAs, the Vina GSA and the Rock Creek Reclamation District GSA. The Vina GSA includes three member agencies: the County of Butte, City of Chico, and Durham Irrigation District (Vina and Rock Creek Reclamation District GSAs 2021).

Measures for ensuring the continued availability of adequate groundwater access for all beneficial users in the subbasins, including municipal needs, have been identified and planned in the relevant Groundwater Sustainability Plans for the subbasins of the project site (Vina and Corning), as confirmed by CDWR (2023a, 2023b). The measures include groundwater conservation and recharge, and supplementing or replacing groundwater sources for irrigation with surface water.

3.3.19.1.2 Wastewater Infrastructure

The project site is not served by any wastewater treatment infrastructure. The closest wastewater treatment facility is southeast of the town of Hamilton City and operated by the Hamilton City Community Services District (County of Glenn LAFCo 2014).

3.3.19.1.3 Solid Waste

The nearest landfill to the project site is the Glenn County Landfill Site (approximately 17 miles west of the proposed project).

3.3.19.1.4 Electricity and Natural Gas

Electrical and gas needs of residents within the project area are met by PG&E.

3.3.19.1.5 Telecommunication Facilities

Telecommunications infrastructure predominantly consists of underground fiber-optic trunk lines that connect to local switching equipment. Distribution to the individual service area units is typically facilitated by overhead lines and utility poles. Multiple companies provide telephone (i.e., land lines and cellular), cable, and internet (e.g., fiber-optic cable, DSL, and fixed wireless) services in the project area, including EarthLink Fiber, AT&T, Comcast/Xfinity, Viasat, and HughesNet. Internet service availability has been notably constrained within the project area. However, CPUC is implementing a program to deploy broadband fiber throughout the state, particularly in rural and underserved areas, which includes the project area (State of California 2025; CPUC 2025).

3.3.19.1.6 Applicable Regulations

3.3.19.1.6.1 California Public Utilities Commission

CPUC regulates services and utilities and assures California's access to safe and reliable utility infrastructure and services. CPUC regulates electricity, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies in California.

3.3.19.1.6.2 California Integrated Waste Management Act

The Integrated Waste Management Act of 1989 (PRC §40050 et seq.), as amended, required each local agency to divert 50% of all solid waste generated within the local agency's jurisdiction by January 1, 2000. This law requires local agencies to maximize the use of all feasible source reduction, recycling, and composting options before using incineration of solid waste to produce heat or

electricity or land disposal. CalRecycle was also created as a result of the Integrated Waste Management Act.

Under this act, local governments develop and implement integrated waste management programs consisting of several types of plans and policies, including local construction and demolition ordinances. The act also set into place a comprehensive statewide system of permitting, inspections, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types and amounts of waste generated.

3.3.19.2 Impact Evaluation

UTI-1: Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No Impact. The proposed project would not require construction of new or relocation or expansion of existing facilities for water, wastewater treatment, storm water drainage, natural gas, or telecommunications. There would be no impact.

UTI-2: Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

No Impact. The proposed project involves the construction of spur dikes, installation of rock and riprap, excavation and fill activities, and vegetation replanting along the Sacramento River. The proposed project would not result in any new water demand. There would be no impact.

UTI-3: Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The proposed project does not require or propose any wastewater collection or treatment. Therefore, the proposed project would not create or increase any wastewater demand on any wastewater treatment provider. There would be no impact.

UTI-4: Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No Impact. There would be no solid waste associated with the operational phase of the proposed project. The proposed project has been specifically designed to balance its new fill areas with corresponding existing fill removal areas to achieve a net zero fill balance. During construction,

excavated soils would be relocated and repurposed as backfill for use on the project site. Therefore, no removal or disposal of soils would be necessary. However, in the event that soils, vegetation, or other debris disposal is needed, the landfill in the project area would have adequate capacity to meet the small quantity generated during construction of the proposed project. Therefore, there would be no impact related to landfill capacities.

UTI-5: Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The proposed project is not expected to produce any substantial solid waste during operations. The proposed project would be constructed within the parameters of applicable federal, state, and local solid waste regulations. Area landfills are authorized to accept solid waste potentially generated by proposed project construction and operation, which would be minimal. Therefore, there would be no impact.

3.3.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		Potentially Significant Impact	Less-Than-Significant Impact After Mitigation	Less-Than-Significant Impact	No Impact
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b.	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

3.3.20.1 Affected Environment

3.3.20.1.1 Environmental Setting

According to CAL FIRE's FHSZ maps, the project area and other nearby communities are outside of zones that present moderate to very high fire hazard severity risk. The project site is not within CAL FIRE's State Responsibility Areas (SRA), where CAL FIRE is the primary emergency response agency responsible for fire suppression and prevention. Therefore, the project site is generally considered to have low wildfire risk (CAL FIRE 2025b). Also, the project site is situated on the Sacramento River surrounded by areas that have been developed for active irrigated farming operations and are not within vegetative areas associated with high fire risk. Existing fire response services are described in Section 3.3.15. As noted, there are adopted regional emergency response plans for the project area.

3.3.20.1.2 Applicable Regulations

3.3.20.1.2.1 National Fire Protection Association Standards

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. NFPA standards are recommended (advisory) guidelines in fire protection but are not laws or codes unless adopted or referenced as such by the California Fire

Code or local fire agency. Specific standards applicable to wildland fire hazards include, but are not limited to, the following:

- **NFPA 1141:** Fire Protection Infrastructure for Land Development in Wildlands
- **NFPA 1142:** Water Supplies for Suburban and Rural Fire Fighting
- **NFPA 1143:** Wildland Fire Management
- **NFPA 1144:** Reducing Structure Ignition Hazards from Wildland Fire
- **NFPA 1710:** Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations

3.3.20.1.2.2 California Department of Forestry and Fire Protection

CAL FIRE is the department responsible for fire protection of over 31 million acres of the State's wildlands. CAL FIRE provides fire assessment and firefighting services for lands within SRAs, conducts educational and training programs, provides fire planning guidance and mapping, and reviews general plan safety elements to ensure compliance with state fire safety requirements.

3.3.20.1.2.3 Fire Hazard Severity Zones and Responsibility Areas

CAL FIRE designates FHSZs as authorized under California Government Code Sections 51175 et seq. CAL FIRE designates FHSZs within three types of areas depending on what level of government is financially responsible for fire protection:

- **Local Responsibility Area (LRA):** Incorporated communities are financially responsible for wildfire protection. There is one severity zone in the LRA, which is the Very High FHSZ.
- **State Responsibility Area (SRA):** CAL FIRE and contracted counties are financially responsible for wildfire protection. There are three hazard zones in SRAs: Moderate, High, and Very High.
- **Federal Responsibility Area (FRA):** Federal agencies, such as the U.S. Forest Service, National Park Service, BLM, U.S. Department of Defense, USFWS, and U.S. Department of the Interior are responsible for wildfire protection.

3.3.20.1.2.4 2024 Strategic Fire Plan for California

The 2024 Strategic Fire Plan for California contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments (CAL FIRE 2024). It focuses on fire prevention and suppression activities to protect lives, properties, and ecosystems.

3.3.20.1.2.5 Glenn County General Plan

The following local policy and action pertaining to wildfire are included in the Safety Element of the *Glenn County General Plan* (Glenn County 2023):

- ***Policy SA 6-12:*** *Support management and conservation activities to reduce fire hazards, including fire hazard reduction, fuel management, and long-term maintenance strategies,*

establishment and maintenance of community fire breaks, public and private road maintenance and vegetation clearance that meet or exceed Public Resources Code Section 4291 requirements, home hardening, and coordinate with fire districts/departments, Fire Safe Councils, and property owners to implement management and conservation activities on an on-going basis.

3.3.20.1.2.6 Butte County General Plan

The following local policy pertaining to wildfire is included in the Health and Safety Element of the *Butte County General Plan 2040* (Butte County 2023a):

- ***Policy HS-P11.1:*** *Fire hazard risk mitigation will be considered in all land use and zoning decisions, environmental review, subdivisions review, and the provision of public services.*

3.3.20.2 Impact Evaluation

WIL-1: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

WIL-2: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

WIL-3: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

WIL-4: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

1-4) No Impact. The project site is not located in or near an SRA nor on lands classified as very high FHSZs. Construction and operation of the proposed project would not impede any existing or future emergency response plans. The project site and the surrounding lands consist of riverbank, agriculture, and water conveyance infrastructure on relatively flat and open land, as well as an access road. Additionally, the proposed project does not include any residential components or habitable structures of any kind, nor would it require any employees to be stationed permanently at the project site on a daily basis. There would be no impacts on wildfire.

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3.3.21 CEQA Mandatory Findings of Significance

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

3.3.21.1 Impact Evaluation

MAN-1: Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less-Than-Significant Impact With Mitigation. The potential for impacts to air quality, biological resources, cultural resources, geology and soils, and Tribal cultural resources from the construction and operation of the proposed project would be less than significant with adherence to the mitigation measures discussed previously. Accordingly, the proposed project would result in less-than-significant impacts with regard to the substantial degradation of the quality of the environment; the substantial reduction in the habitat or population of fish or wildlife species, including endangered plants or animals; the threat of elimination of a plant or animal community; the substantial reduction to the number of or restriction of the range of a rare or endangered plant or animal; or the elimination of important examples of the major periods of California history or prehistory. Specifically, the proposed project could potentially impact several special-status species,

including Federally and State-listed wildlife and fish species, and result in habitat loss. Implementation of Mitigation Measures MM-BIO-1 through MM-BIO-24 would avoid, minimize, and offset these impacts. Measures include preconstruction surveys, seasonal work restrictions, habitat restoration, and fish exclusion protocols. With these measures in place, the potential for habitat degradation, species population decline, or loss of plant or animal communities would be reduced to a less-than-significant level. Ground-disturbing activities could affect previously undocumented archaeological resources or Tribal cultural sites. However, Mitigation Measure MM-CUL-1 would ensure that any discoveries during construction are properly handled in coordination with Tribes and regulatory agencies. Construction of the proposed project would involve substantial ground-disturbing activities—such as grading, excavation, vegetation removal, and bank protection installation—within a highly erodible area along the Sacramento River. These activities could temporarily degrade the quality of the environment by accelerating soil erosion, increasing sedimentation, and potentially affecting downstream water quality during rain events or high flows. However, the project is fundamentally designed to mitigate ongoing erosion that currently threatens bank stability and aquatic habitat. In addition, with implementation of erosion and sediment control measures and compliance with stormwater regulations (MM-GEO-1 and MM-GEO-2), the potential for the project to substantially degrade the quality of the environment would be reduced to less-than-significant levels.

The analysis conducted in this IS/MND results in a determination that the proposed project, with incorporation of mitigation measures discussed previously, would have a less-than-significant effect on the environment.

MAN-2: Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-Than-Significant Impact After Mitigation. CEQA Guidelines Section 15064(i) states that a Lead Agency must consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. This cumulative impact analysis is therefore based on a project list approach, considering other projects within 1 mile radius of the proposed project, shown in Table 12.

Table 12
Cumulative Projects List

Project	Status	Description
GCID Maintenance Dredging Project	Annual	Annual dredging of the left and right bank of the intake channel west of Montgomery Island on the Sacramento River.
Sites Reservoir Project	Construction begins 2026; operational end of 2032.	Water diversion from upper Sacramento River to the proposed new Sites Reservoir by utilizing existing Red Bluff Pumping Plant (primary) /Hamilton City Pump Station (secondary), fish screen facilities, and pumping stations.

The proposed project involves the construction of spur dikes, installation of rock and riprap, excavation and fill activities, and vegetation replanting along the Sacramento River to support and maintain the GCID's water conveyance facilities. Air and GHG emissions would be minimal, temporary, and below applicable thresholds of significance. No new public roads would be constructed as a result of the proposed project, nor would any additional public services or utilities be required. The proposed project would not result in direct or indirect population growth.

There would be no impact or less than significant impacts from the proposed project in the areas of aesthetics, agriculture and forestry resources, energy, GHG emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and service systems, and wildfire. There would be no cumulative impact and no cumulatively considerable impact under the resource areas where the proposed project would have no impact.

All other potential impacts would be less than significant or reduced to less than significant through the implementation of mitigation measures, adherence to basic regulatory requirements, and inclusion of project-specific design measures. As described in MAN-1, mitigation measures have been proposed to avoid significant air quality, biological resources, cultural resources, geology and soils, and Tribal cultural resources impacts. These include mitigation measures MM-AIR-1, MM-BIO-1 through MM-BIO-24, MM-CUL-1, MM-GEO-1, and MM-GEO-2. Less than significant impacts of the proposed project could potentially combine with the impacts of other proposed projects in such a way as to contribute to cumulatively considerable environmental impacts. GCID's maintenance dredging project would be short term each year and small scale, occurring only within the intake channel west of Montgomery Island and would not disturb riparian growth. The maintenance dredging would not be expected to result in significant environmental impacts and would include standard mitigation measures and BMPs similar to those of the proposed project, as specified in all mandatory permits from the appropriate resource agencies, to ensure protection of air quality, biological resources, cultural resources, geological resources, and water quality during construction. No construction impacts would occur in the project area under the Sites Reservoir Project. Operation

of the Sites Reservoir Project would overlap with Phase 2 of the proposed project, would comply with all permitting and regulatory requirements of the appropriate agencies and would not be expected to result in any significant impacts at the project area. Once operational, the proposed project would provide benefits to other activities and projects in the area by reducing erosion and sedimentation and stabilizing the river bank.

Therefore, the proposed project would not result in a cumulatively considerable contribution to any resource area and cumulative impacts as a result of the proposed project would be less than significant or less than significant with mitigation incorporated. The analysis conducted in this IS/MND results in a determination that the proposed project, with incorporation of mitigation measures discussed previously, would have a less-than-significant impact as related to cumulative impacts.

MAN-3: Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less-Than-Significant Impact After Mitigation. As noted, the proposed project would result in minimal less-than-significant construction impacts to air quality with incorporation of mitigation. The proposed project would ensure the long-term viability of the GCID agricultural diversion, which will benefit humans. The analysis conducted in this IS/MND results in a determination that the proposed project, with incorporation of mitigation measures discussed previously, would have less than significant effects that could adversely affect human beings.

4 References

Anchor QEA, 2022. *DRAFT Preliminary Jurisdictional Delineation for Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project*. June 2022.

Anchor QEA, 2025a. Letter to: David Gomez, Colusa Indian Community Council. Regarding: Formal AB 52 Notification Pursuant to Public Resources Code Section 21080.3.1 that the Glenn-Colusa Irrigation District Has Decided to Undertake the Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project. June 17, 2025.

Anchor QEA, 2025b. Email to: Hannah Thompson, Colusa Tribe – Cachil Dehe Band of Wintun Indians. Regarding: Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project. July 9, 2025.

ARB (California Air Resources Board), 2008. *Climate Change Scoping Plan.* December 2008. Accessed: July 29, 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf.

ARB, 2010. *Resolution 10-23.* September 23. Accessed July 29, 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2010/res10-23.pdf.

ARB, 2014. *First Update to the Climate Change Scoping Plan*. May 2014. Accessed: July 29, 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

ARB, 2015. *Estimating Health Benefits Associated with Reductions in PM and NOx Emissions: Detailed Description*.

ARB, 2017. *The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target.* January 20, 2017. Accessed July 29, 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_pp_final.pdf.

ARB, 2021. *2022 Climate Change Scoping Plan Update*. Accessed July 29, 2025. Available at: https://calepa.ca.gov/wp-content/uploads/2021/10/2021_0928_CARB-IEMAC-Scoping-Plan-Update.a.pdf.

ARB, 2024. *Wildfires & Climate Change.* Available: https://ww2.arb.ca.gov/wildfires-climate-change. Accessed July 29, 2025. Accessed: February 28, 2024.

Arrington, C.J., and P. Hanes, 2018. Natural Investigations Company. *Cultural Resources Inventory and Effects Assessment for the Glenn-Colusa Irrigation District Intake Channel Maintenance Project, Glenn County, California*. Prepared for Glenn-Colusa Irrigation District.

Baicich, P.J., and C.J.O. Harrison, 2005. *Nests, Eggs, and Nestlings of North American Birds*. Second Edition. Princeton University Press. Princeton, New Jersey. 347 pp.

BCAQMD (Butte County Air Quality Management District), 2024. CEQA Air Quality Handbook Guideline for Assessing Air Quality and Greenhouse Gas Impacts for Projects Subject to CEQA Review. March 28. Accessed April 30, 2025. Available at: https://www.bcaqmd.org/files/583f235c2/CEQA-Handbook-2024-Update-Final.pdf.

Beier, P., and S. Loe, 1992. "In My Experience: A Checklist for Evaluating Impacts to Wildlife Movement Corridors." *Wildlife Society Bulletin* 20(4):434–40. Accessed August 22, 2024. Available at: http://www.jstor.org/stable/3783066.

BLM (Bureau of Land Management), 2007. *Potential Fossil Yield Classification System*. Accessed October 9, 2024. Available at: https://www.blm.gov/sites/default/files/uploads/IM2016-124_att1.pdf.

Butte County, 2004. *Butte County Groundwater Management Plan*. Accessed October 16, 2024. Available at: https://www.buttecounty.net/1150/Groundwater-Management-Plan.

Butte County, 2019. *Butte County Local Hazard Mitigation Plan Update*. Figure 4-106 Butte County Planning Area – Liquefaction Potential Areas map. Accessed October 9, 2024. Available at: https://www.buttecounty.net/DocumentCenter/View/3926/2019-Local-Hazard-Mitigation-Plan---Chapter-4---Risk-Assessment-PDF.

Butte County, 2023a. *Butte County General Plan 2040*. March 2023. Accessed October 8, 2024. Available at: https://www.buttecounty.net/367/Butte-County-General-Plan-2040.

Butte County, 2023b. *Butte County 2023 Crop & Livestock Report*. Accessed October 8, 2024. Available at: https://www.buttecounty.net/ArchiveCenter/ViewFile/Item/875.

Butte County, 2024a. *Fire*. Accessed October 10, 2024. Available at: https://www.buttecounty.net/472/Fire

Butte County, 2024b. *Patrol*. Accessed October 10, 2024. Available at: https://www.buttecounty.net/1783/Patrol.

Butte County Airport Land Use Commission, 2017. *Butte County Airport Land Use Compatibility Plan*. Accessed October 9, 2024. Available at: https://www.buttecounty.net/DocumentCenter/View/3012/Butte-County-Airport-Land-Use-Compatibility-Plan-PDF.

Butte County Association of Governments, 2007. *Butte County NCP/HCCP*. Accessed June 30, 2025. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=26477&inline.

CalEEMod (California Emission Estimator Model), 2023. Version 2022.1.

CAL FIRE (California Department of Forestry and Fire Protection), 2024. CAL FIRE Strategic Plan 2024 – Transforming Tomorrow. February 2024. Accessed July 28, 2025. Available at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/about/2024-strategic-plan.pdf?rev=37375a587e4647eb84dd70e716d467ff&hash=86658BD240BE9A86FC751547E68295D4.

CAL FIRE, 2025a. CAL FIRE Timber Harvesting Plans ALL TA83. Published February 28, 2024, and updated August 4, 2024. Accessed on August 13, 2024. Available at: https://hub-calfire-forestry.hub.arcgis.com/datasets/CALFIRE-Forestry::cal-fire-timber-harvesting-plans-all-ta83/explore?layer=0.

CAL FIRE, 2025b. *Fire Hazard Severity Zones Maps*. Accessed May 7, 2025. Available at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones.

CalFlora, 2025. Online Plant Database, Interactive Distribution Map. Accessed March 1, 2025. Available at: www.calflora.org.

Caltrans (California Department of Transportation), 2002. *Guide for the Preparation of Traffic Impact Studies*. December 2002. Available at: https://nacto.org/docs/usdg/guide_preparation_traffic_impact_studies_caltrans.pdf.

Caltrans, 2020. *Transportation and Construction-Induced Vibration Guidance Manual*. Accessed July 29, 2025. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

CAT (Climate Action Team), 2010. *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*. December. Accessed: July 28, 2025. Available at: https://anyflip.com/lrdo/finn/basic.

CCCC (California Climate Change Center), 2018. *California's Changing Climate 2018: A Summary of Key Findings from California's Fourth Climate Change Assessment.* Accessed: July 28, 2025. Available at: https://www.climateassessment.ca.gov/state/overview/.

CDC (California Department of Conservation), 2015. Alquist-Priolo Earthquake Fault Zones. Accessed on July 28, 2025. Available at: https://www.conservation.ca.gov/cgs/alquist-priolo

CDFA (California Department of Food and Agriculture), 2023. 2023: California Agricultural Statistics Review.

CDFG, 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. Swainson's Hawk Technical Advisory Committee. May 31.

CDFW (California Department of Fish and Wildlife), 1992. *Recovery Plan: Bank Swallow* (Riparia riparia). Nongame Bird and Mammal Section Report 93.02. December.

CDFW, 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Accessed August 20, 2025. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline.

CDFW, 2025. California Natural Diversity Database and BIOS online mapping. Accessed July 8, 2025. Available at: http://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data.

CDOC (California Department of Conservation), 2015. Fault Activity Map of California. Accessed October 9, 2024. Available at: https://maps.conservation.ca.gov/cgs/fam/.

CDOC, 2022. CGS Information Warehouse: Mineral Land.

CDM and CDWR (CDM in association with the California Department of Water Resources, Northern District), 2003. Water Inventory and Analysis. Tehama County Flood Control and Water Conservation District. Accessed July 29, 2025. Available at: https://tehamacountywater.org/wp-content/uploads/2020/09/water-inventory-and-analysis.pdf.

CDWR (California Department of Water Resources), 2021. California's Groundwater Update 2020. Bulletin 118. November 2021. Accessed July 29, 2025. Available at: https://data.cnra.ca.gov/dataset/3f87088d-a2f9-4a46-a979-1120069db2c6/resource/d2b45d3c-52c0-45ba-b92a-fb3c90c1d4be/download/calgw2020_full_report.pdf.

CDWR, 2023a. Letter to Butte County Department of Water and Resource Conservation RE: Sacramento Valley Basin – Vina Subbasin – 2022 Groundwater Sustainability Plan. July 27.

CDWR, 2023b. Letter to County of Glenn Groundwater Sustainability Agency – Corning. October 26.

CDWR, 2024. GSA Map Viewer. Accessed October 9, 2024. Available at: https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true.

CEC (California Energy Commission): 2016. Electricity Consumption by County. Accessed July 30, 2025. Available at: https://ecdms.energy.ca.gov/elecbycounty.aspx.

CEC, 2025a. Final 2024 Integrated Energy Policy Report. February 2024. Accessed May 28, 2025. Available at: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report-iepr/2024-integrated-energy-policy-report.

CEC, 2025b. Total Generation by Type and County: 2022. Accessed July 30, 2025. Available at: https://data.ca.gov/dataset/total-generation-by-type-and-county-2022.

CEC, 2025c. Natural Gas Consumption. Accessed July 30, 2025. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-consumption-dashboards-1.

CEC and California Public Utilities Commission (CPUC), 2008. *Energy Action Plan II*. Accessed July 28, 2025. Available at: https://docs.cpuc.ca.gov/word_pdf/REPORT/51604.pdf.

Census Reporter, 2024a. Capay Joint Union Elementary School District. Accessed October 10, 2024. Available at: https://censusreporter.org/profiles/95000US0607410-capay-joint-union-elementary-school-district-ca/.

Census Reporter, 2024b. Hamilton City, CA. Accessed October 10, 2024. Available at: https://censusreporter.org/profiles/95000US0607410-capay-joint-union-elementary-school-district-ca/.

Citizens for Positive Growth & Preservation v. City of Sacramento. C086345, Super. Ct. No. 34201580002058CUWMGDS (Calif. Ct. App. 2019).

CNDDB (California Natural Diversity Database), 2025. Special Animals List. California Department of Fish and Wildlife. Sacramento, CA. April.

CNRA (California Natural Resources Agency), 2024. CGS Seismic Hazards Program: Liquefaction Zones. Accessed July 28, 2025. Available at: https://gis.data.cnra.ca.gov/datasets/cadoc::cgs-seismic-hazards-program-liquefaction-zones/explore.

Colby, G.W., 1870. Survey of Township 22 North, Range 2 West of the Mount Diablo Meridian. General Land Office, California.

Colusa Tribe (Colusa Tribe – Cachil Dehe Band of Wintun Indians), 2025. Email to: Marine Vié, Anchor QEA. Regarding: Glenn-Colusa Irrigation District Gradient Facility Rehabilitation Project. July 9, 2025.

Corning Subbasin GSA (Corning Subbasin Groundwater Sustainability Agency) and Tehama County FCWCD (Tehama County Flood Control and Water Conservation District), 2024. *Corning Subbasin Groundwater Sustainability Plan*. November 2021, Revised April 2024. Accessed October 14, 2024. Available at: https://tehamacountywater.org/wp-content/uploads/2024/09/1_Corning_Table-of-Contents.pdf.

County of Glenn, 2024b. *Glenn County Sheriff*. Accessed October 10, 2024. Available at: https://www.countyofglenn.net/government/departments/sheriff.

County of Glenn Department of Agriculture, 2022. *Glenn County 2022 Annual Crop & Livestock Report*. Accessed October 8, 2024. Available at: https://www.countyofglenn.net/sites/default/files/Agriculture/Glenn%20County%202022%20Crop%20Rpt_FINAL.pdf.

County of Glenn LAFCo (County of Glenn Local Agency Formation Commission), 2014. *Hamilton City Community Services District; Municipal Service Review and Sphere of Influence.* Accessed October 14, 2024. Available at: https://www.countyofglenn.net/sites/default/files/Local_Agency_Formation_Commission/HamiltonCityCommunityServicesDistrict-MunicipalServiceReviewandSphereofInfluence.pdf.

County of Tehama Department of Agriculture, 2022. *Tehama County 2022 Crop & Livestock Report*. Accessed October 8, 2024. Available at: https://www.tehama.gov/wp-content/uploads/2023/11/2022-crop-report.pdf.

CPUC (California Public Utilities Commission), 2025. "Broadband Implementation for California." Accessed June 4, 2025. Available at: https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california.

CRWQCB (California Regional Water Quality Control Board, Central Valley Region), 2019. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region Fifth Edition (with Approved Amendments); The Sacramento River Basin and the San Joaquin River Basin.* Accessed October 14, 2024. Available at: https://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/sacsjr_201902.pdf.

Davids and West Yost (Davids Engineering, Inc., and West Yost Associates), 2018. *Hydrogeologic Conceptual Model Report. prepared for County of Glenn and County of Colusa.* Accessed October 16, 2024. Available at:

https://www.countyofglenn.net/sites/default/files/Water_Resources/022318%20ac1%20Colusa%20Glenn%20HCM_w%20tab_fig_app.pdf.

DTSC (Department of Toxic Substances Control), 2024. Envirostor Database search for the project area. Accessed October 9, 2024. Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Wilson+Island%2C+CA.

EROS (Earth Resources Observation and Science Center), 2021. National Landcover Database. Accessed August 6, 2024. Available at: https://www.usgs.gov/centers/eros/science/national-land-cover-database.

FEMA (Federal Emergency Management Agency), 2010. FIRM for Glenn County and Unincorporated Areas, Panel 200 of 900.

FEMA, 2011a. Flood Insurance Rate Map (FIRM) for Butte County and Unincorporated Areas, Panel 300 of 1200.

FEMA, 2011b. FIRM for Tehama County and Unincorporated Areas, Panel 1775 of 1775.

FHWA (Federal Highway Administration), 2006. Construction Noise Handbook. Available at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/.Glenn-Colusa Irrigation District, 2023. Website. *About Us*. Accessed October 9, 2024. Available at: https://www.gcid.net/about-us/.

GCID (Glenn-Colusa Irrigation District), 2025a. DRAFT Biological Assessment and Essential Fish Habitat Assessment for the Glenn-Colusa Irrigation District Gradient Restoration Facility Rehabilitation Project, Phase I. June 20, 2025.

GCID, 2025b. About Us. Accessed July 28, 2025. Available at: https://www.gcid.net/about-us/#history

Glenn County, 2018. *Glenn County, CA Multi-Jurisdiction Hazard Mitigation Plan.* Accessed October 16, 2024. Available at: https://www.countyofglenn.net/sites/default/files/Planning/Glenn%20County%20MJHMP%20100918.pdf.

Glenn County, 2023. *Glenn County General Plan*. Accessed October 8, 2024. Available at: https://static1.squarespace.com/static/5c8a73469b7d1510bee16785/t/6501ddc090fa5b221162db04/1694621148151/GlennCounty_General+Plan+Adopted+7-18-23.pdf.

Glenn County Planning and Public Works, 2010. Glenn County: Fire Protection Districts map. Accessed October 10, 2024. Available at: https://glenncounty.granicus.com/MetaViewer.php?view_id=8&clip_id=999&meta_id=87165.

Hahn, P.K.J., R.E. Bailey, and A. Ritchie, 2007. "Beach seining." D.H. Johnson, B.M. Shrier, J.S. O'Neal, J.A. Knutzen, X. Augerot, T.A. O'Neil, and T.N. Pearsons. Salmonid Field Protocols Handbook: Techniques for Assessing Status and Trends in Salmon and Trout Populations. America. Fisheries Society. Bethesda, Maryland: Hallock and Fisher; pp. 267–324.

Harden, D.R., 1998. *California Geology*. Prentice Hall, 479 pages.

IPCC (Intergovernmental Panel on Climate Change), 2021. *Climate Change 2021: The Physical Science Basis*. Working Group I Contribution to the IPCC Sixth Assessment Report.

Jepson Flora Project (eds.) 2025. *Jepson eFlora*. Accessed March 1, 2025. Available at: https://ucjeps.berkeley.edu/eflora/.

Johnson, K.L., 1974. CSU-Chico. Archaeological Reconnaissance of the Chico Landing to Red Bluff Bank Protection Project, Sacramento River, California. Prepared for U.S. Army Corps of Engineers – Sacramento District.

Lomeli, Henry. Personal communication with Sapere Environmental, June 17, 2025.

Metsker, C.A., 1939a. Metsker's County Map: Butte County, California. Metsker Maps, Seattle, Washington.

Metsker, C.A., 1939b. Metsker's County Map: Glenn County, California. Metsker Maps, Seattle, Washington.

NMFS (National Marine Fisheries Service), 1997. *Fish Screening Criteria for Anadromous Salmonids*. January 1997. NMFS Southwest Region.

NOAA Fisheries, 2022. Sacramento River Basin, California. Updated May 16, 2022. Accessed August 13, 2024. Available at: https://www.fisheries.noaa.gov/west-coast/about-us/sacramento-river-basin-california.

NRCS (Natural Resources Conservation Service), 2023. Web Soil Survey search of project area. Accessed October 9, 2024. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

OPR (Governor's Office of Planning and Research), 2017. *State of California General Plan Guidelines*. Accessed July 29, 2025. Available at: http://opr.ca.gov/planning/general-plan/guidelines.html.

OPR, 2018. Discussion Draft CEQA and Climate Change Advisory. December 2018. Accessed July 29, 2025. Available at: https://opr.ca.gov/docs/20181228-Discussion_Draft_Climate_Change_Adivsory.pdf.

Peak and Associates, Inc., 1995. *Cultural Resources Assessment of the Glenn-Colusa Irrigation District Screening Alternatives, Glenn County, California*.

Sapere Environmental (Sapere Environmental, LLC), 2025. *Biological Assessment, Wildlife, Gradient Facility Rehabilitation Project – Phase I*. Prepared for Glenn-Colusa Irrigation District. April 2025.

Schweiger, W., J.E. Diffendorfer, R.D. Holt, R. Pierotti, and M.S. Gaines, 2000. "The Interaction of Habitat Fragmentation, Plant, and Small Mammal Succession in an Old Field." Ecological Monographs 70(3):383–400.

State of California, 2025. California Interactive Broadband Map. Accessed July 28, 2025. Available at: https://www.broadbandmap.ca.gov/.

SVAQEEP (Sacramento Valley Air Quality Engineering and Enforcement Professionals), 2024. Northern Sacramento Valley Planning Area 2024 Triennial Air Quality Attainment Plan. Accessed April 30, 2025. Available at: https://www.fraqmd.org/files/7dc5ce796/Final+2024+Ozone+Attainment+Plan.pdf.

TCAPCD (Tehama County Air Pollution Control District), 2015. Air Quality Planning & Permitting Handbook Guidelines for Assessing Air Quality Impacts. April 2015. Accessed April 30, 2025. Available at: https://tehcoapcd.net/PDF/CEQA%20Handbook%20Mar%202015%20Final.pdf.

Tehama County, 2009. *Tehama County General Plan*. March 2009. Accessed October 8, 2024. Available at: https://tehamartpa.org/wp-content/uploads/2020/06/2009-2029-Tehama-County-General-Plan-r1.pdf.

Tehama County Fire Department, 2024. *Our Department*. Accessed October 10, 2024. Available at: https://www.tehamacountyfire.org/our-department/.

Tehama County Sheriff's Office, 2024. *Operations/Patrol*. Accessed October 10, 2024. Available at: https://tehamaso.org/operations-patrol/.

USACE (United States Army Corps of Engineers), SF District, 2024. San Francisco District Rivers. Accessed July 29, 2025. Available at: https://www.spn.usace.army.mil/Missions/Recreation/Bay-Model-Visitor-Center/Army-Corps-of-Engineers-Trek/Lakes/.

USBR (U.S. Bureau of Reclamation), 2024. Long-Term Operation, Central Valley Project, California, Interior Region 10 – California Great Basin. April 2024.

U.S. Census Bureau, 2024. "California." Last modified 2024. Accessed August 22, 2024. Available at: https://data.census.goc/profile/California?g=040xx00us06.

USDA (U.S. Department of Agriculture), 2024. USDA 2024 "California Crops Under Climate Change." Last modified 2024. Accessed July 16, 2024. Available at: https://www.climatehubs.usda.gov/hubs/california/california-crops-under-climate-change.

USEIA (U.S. Energy Information Administration), 2024. California State Profile and Energy Usage. Accessed August 21, 2024. Available at: https://www.eia.gov/state/?sid=CA.

USEPA (U.S. Environmental Protection Agency), 2021. Integrated Risk Information System. Last updated October 6, 2021. Accessed August 22, 2024. Available at: https://www.epa.gov/iris.

USFWS (U.S. Fish and Wildlife Service), 2007. *Bald Eagle Monitoring Guidelines*. September. USFWS, 2022. Information for Planning and Consultation (IPaC) report. Accessed June 16, 2022. Available at: https://ipac.ecosphere.fws.gov/.

USFWS, 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle. May 2017. Accessed August 20, 2025. Available at: https://www.fws.gov/sites/default/files/documents/survey-guidelines-for-valley-elderberry-longhorn-beetle.pdf.

USFWS, 2020. *Nebraska Bald Eagle Survey Protocol*. Nebraska Game and Parks Commission. March.

USFWS, 2023. List of Birds Protected by the Migratory Bird Treaty Act (2023). Accessed July 10, 2025. Available at: https://www.fws.gov/media/list-birds-protected-migratory-bird-treaty-act-2023.

USFWS, 2025. Information for Planning and Consultation. Accessed July 10, 2025. Available at: https://www.fws.gov/service/information-planning-and-consultation.

USGCRP (U.S. Global Change Research Program), 2018. *Fourth National Climate Assessment: Volume II Impacts, Risks, and Adaptation in the United States*.

USGS (U.S. Geological Survey), 2015. UCERF3: A New Earthquake Forecast for California's Complex Fault System. Fact Sheet 2015-3009. March. Accessed July 28, 2025. Available at: https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf.

USGS, 2017. The State Geologic Map Compilation (SGMC) Geodatabase of the Conterminous United States Accessed: July 28, 2025. Available at: https://www.sciencebase.gov/catalog/item/5888bf4fe4b05ccb964bab9d.

USGS, 2024. California's Central Valley. Accessed July 28, 2025. Available at: https://ca.water.usgs.gov/projects/central-valley/about-central-valley.html.

Vina and Rock Creek Reclamation District GSAs, 2021. *Vina Groundwater Subbasin Groundwater Sustainability Plan*. Accessed October 14, 2024. Available at: https://www.vinagsa.org/files/11ce47a1b/1.+Vina+GSP_Preface%2C+Table+of+Contents.pdf.

Water Education Foundation, 2024. Water Supply in California. Available at: https://www.watereducation.org/aquapedia/water-supply-california.

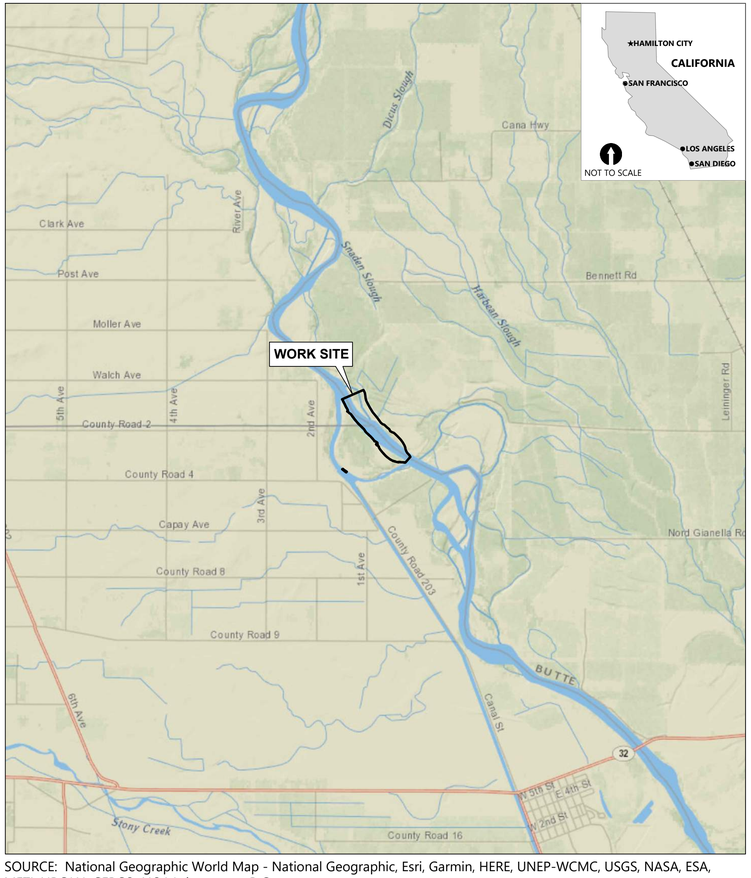
Appendix A – Site Plans

90% DESIGN SUBMITTAL

GRADIENT FACILITY REHABILITATION

GLENN-COLUSA IRRIGATION DISTRICT

DRAWING INDEX		
SHT #	DWG NO.	TITLE
1	G01	COVER SHEET
2	G02	GENERAL NOTES, ABBREVIATIONS & EARTHWORKS ESTIMATES
3	G03	EXISTING CONDITIONS - SITE OVERVIEW
4	G04	SITE ACCESS
5	G05	SITE STAGING, STOCKPILING, AND IMPROVEMENT PLAN
6	G06	SITE CLEARING AND VEGETATION IMPACT AREAS
7	C01	SITE PLAN
8	C02	EAST OVERBANK PROTECTION
9	C03	SCOUR HOLE STABILIZATION (PHASE 2)
10	C04	EAST BANK SPUR DIKES (1-5)
11	C05	EAST BANK SPUR DIKES (6-11)
12	C06	WEST BANK SPUR DIKES (1-3, PHASE 2)
13	C07	WEST BANK SPUR DIKES (4-7 AND ROCK PROTECTION)
14	C08	EAST OVERBANK PROTECTION CROSS SECTIONS
15	C09	SCOUR HOLE STABILIZATION CROSS SECTIONS (PHASE 2)
16	C10	SCOUR HOLE STABILIZATION PROFILE (PHASE 2)
17	C11	EAST BANK SPUR DIKE CROSS SECTIONS (SHEET 1 OF 2)
18	C12	WEST BANK SPUR DIKE CROSS SECTIONS
19	C13	TYPICAL DETAILS
20	L01	PLANTING PLAN (1 OF 2)
21	L02	PLANTING PLAN (2 OF 2)
22	L03	PLANTING DETAILS



SOURCE: National Geographic World Map - National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

VICINITY MAP

0 4000 8000

SCALE IN FEET

NORTH

SOURCE: AERIAL PHOTOGRAPH FROM ©MICROSOFT, BING MAPS

LOCATION MAP

0 600 1200

SCALE IN FEET

NORTH

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. MONTGOMERY
DRAWN BY: C. HEWETT
CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

COVER SHEET

G01

SHEET # 1 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-001 (TITLE-NOTES-ABREV).dwg G01

Nov 08, 2024 11:51am chewett

GENERAL NOTES:

HORIZONTAL DATUM: CALIFORNIA STATE PLANE ZONE II, NAD83, U.S. SURVEY FEET

VERTICAL DATUM: NAVD88

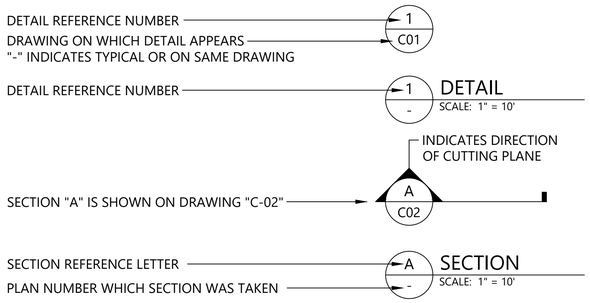
SOURCE:

1. AERIAL FROM AN UNMANNED AERIAL VEHICLE FROM PROVOST AND PRITCHART, DATED 12/18/2021.
2. ROCK TOE TRENCH, GRADIENT FACILITY, AND SHEET PILE FROM AYRES ASSOCIATES, DATED 2/25/2000.
3. BATHYMETRIC AND TOPOGRAPHIC SURVEY FROM NV5 GEOSPATIAL, DATED 4/11/21.
4. BATHYMETRIC SURVEY FROM SOLMAR HYDRO, DATED 9/8/21.
5. TOPOGRAPHIC SURVEY FROM PROVOST & PRITCHARD, DATED 12/5/2022.

NOTES:

1. CONTRACT DOCUMENTS REFER TO THESE DRAWINGS, THE PROJECT SPECIFICATIONS, THE BIDDING DOCUMENTS, AND THE CONSTRUCTION CONTRACT.
2. EXCEPT AS OTHERWISE NOTED HEREIN, ALL MATERIAL AND WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CALIFORNIA STATE TRANSPORTATION AGENCY DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" (2018 REVISED EDITION), OTHER APPLICABLE STANDARDS, AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. THE CONTRACTOR SHALL HAVE COPIES OF THE APPROVED CONTRACT DOCUMENTS AND THE CALIFORNIA STATE TRANSPORTATION AGENCY DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" (2018 REVISED EDITION) ON THE JOB SITE AT ALL TIMES.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR VERIFYING FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THESE CONTRACT DOCUMENTS. ANY DISCREPANCIES BETWEEN THE EXISTING FIELD CONDITIONS AND DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS AND THOSE OBSERVED BY THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND THE PROJECT ADMINISTRATOR PRIOR TO PROCEEDING WITH CONSTRUCTION.
5. A PRE-CONSTRUCTION MEETING BETWEEN THE OWNER, THE PROJECT ADMINISTRATOR, AND THE ENGINEER SHALL BE REQUIRED PRIOR TO ANY ON-SITE WORK.
6. THE CONTRACTOR SHALL RECEIVE, IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WITH ANY WORK ON ANY ITEM NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. ALL WORK SHALL BE IN CONFORMANCE WITH EXISTING LABOR LAWS, SAFETY REQUIREMENTS, AND OTHER REGULATIONS, AS REQUIRED BY THE COUNTY THE WORK IS TAKING PLACE IN, THE STATE OF CALIFORNIA, AND THE FEDERAL GOVERNMENT.
8. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THIS CONTRACT.
10. THE CONTRACTOR SHALL NOT INTERFERE WITH GCID OPERATIONS AND SHALL STAGE ALL EQUIPMENT, VEHICLES, MATERIALS, BUILDINGS, AND PERSONNEL WITHIN THE PROVIDED STAGING AREA. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL NOT EXCAVATE OR DISTURB BEYOND THE CLEARING LIMITS SHOWN ON THE DRAWINGS UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
11. THE CONTRACTOR SHALL MAKE ALL NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, ROADWAYS, DRAINAGE WAYS, CULVERTS, AND VEGETATION UNTIL SUCH ITEMS ARE TO BE DISTURBED OR REMOVED AS INDICATED ON THE CONTRACT DOCUMENTS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF PROPERTY IN AND AROUND THE PROJECT AREA. UNLESS OTHERWISE NOTED ON THESE DRAWINGS, ITEMS SUCH AS FENCING, GATES, DRIVEWAYS, ETC., THAT ARE AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE REPAIRED OR REPLACED FOLLOWING CONSTRUCTION.
13. RUBBISH, DEBRIS, AND GARBAGE SHALL BE REMOVED FROM THE JOB SITE PRIOR TO ACCEPTANCE AND DISPOSED OF LEGALLY. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
14. DISTURBED AREAS SHALL BE GRADED SMOOTH AND PROTECTED AND/OR REVEGETATED AS INDICATED IN THE SPECIFICATIONS.
15. THE NOTES, DETAILS AND SPECIFICATIONS ON THE CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE OVER THESE GENERAL NOTES.
16. DIMENSION CALL-OUTS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON THE DRAWINGS.
17. THE CONTRACTOR SHALL MAINTAIN HAND DRAWN REDLINES, FIELD NOTES, AND PHOTOGRAPHS ("FIELD DOCUMENTATION") OF ALL IMPROVEMENTS AS THE WORK PROGRESSES. THE CONTRACTOR'S FIELD DOCUMENTATION SHALL BE MAINTAINED ON-SITE AND SHALL BE AVAILABLE FOR REVIEW BY THE OWNER AND THE ENGINEER AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE FIELD DOCUMENTATION TO THE ENGINEER FOR THE PREPARATION OF CERTIFIED RECORD DRAWINGS PRIOR TO PROJECT ACCEPTANCE.

DETAIL AND SECTION REFERENCING:



ABBREVIATIONS:

APPROX.	APPROXIMATE
EL.	ELEVATION
FT	FEET
GCID	GLENN-COLUSA IRRIGATION DISTRICT
IN	INCH
MIN	MINIMUM
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
OHWM	ORDINARY HIGH WATER MARK
TYP	TYPICAL

ANTICIPATED IMPACT AREA AND EXCAVATION/MATERIAL PLACEMENT VOLUME

FEATURE	TOTAL CUT VOLUME (CY)	TOTAL FILL VOLUME (CY)	NET TOTAL VOLUME (CY)	TOTAL AREA (SF)
EAST BANK SPUR DIKES				
E-1	206	1,817	1,611	6,403
E-2	101	946	845	4,629
E-3	146	1,644	1,498	6,057
E-4	140	1,111	971	4,954
E-5	144	1,407	1,263	5,738
E-6	157	1,434	1,277	5,822
E-7	140	1,590	1,450	5,976
E-8	92	2,067	1,975	8,559
WEST SPUR DIKES				
W-5	189	1,646	1,457	6,408
W-6	77	1,849	1,772	6,513
W-7	93	1,754	1,661	6,363
WEST BANK REVETMENT AT FISH CHANNEL	0	2,213	2,213	12,702
EAST OVERBANK PROTECTION ALONG SHEETPILE WALLS				
3 - RIPRAP PAD (DOWNSTREAM)	4,804	2,754	-2,050	20,777
PHASE 1 TOTALS				
PHASE 1 SPUR DIKE SUBTOTAL	1,500	17,270	15,790	67,430
PHASE 1 WEST BANK REVETMENT AT FISH CHANNEL	0	2,230	2,230	12,700
PHASE 1 EAST OVERBANK PROTECTION ALONG SHEETPILE WALLS	4,820	2,760	-2,060	20,770

NOTE: ESTIMATES ARE BASED ON EXISTING CONDITIONS SURVEY AS NOTED ON THIS SHEET. CONTRACTOR TO VERIFY VOLUMES BASED ON PRE-CONSTRUCTION SURVEYS.

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-001 (TITLE-NOTES-ABREV).dwg G02

Nov 08, 2024 11:51am chewett

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

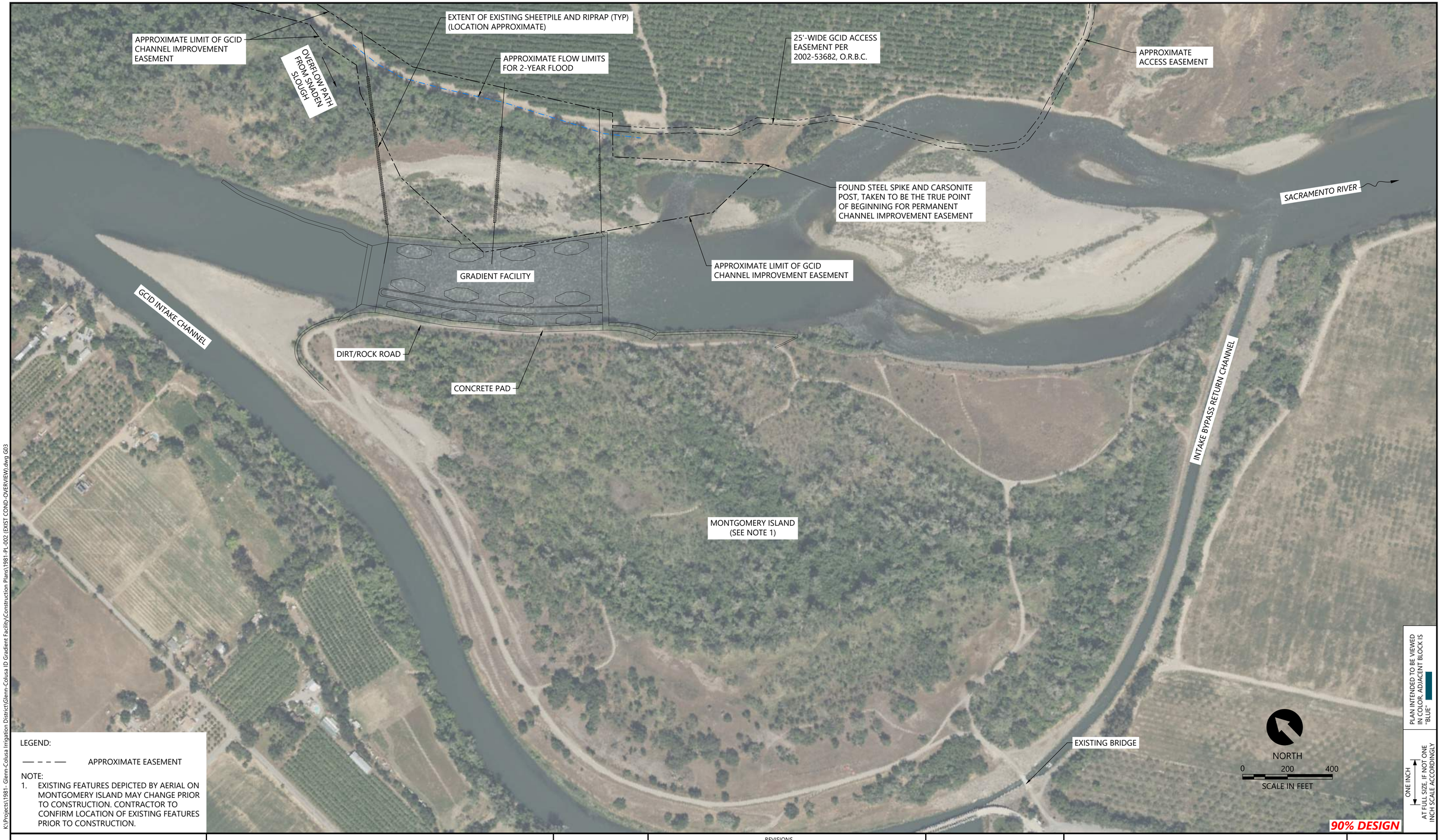
DESIGNED BY: R. MONTGOMERY
DRAWN BY: C. HEWETT
CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

GENERAL NOTES, ABBREVIATIONS & EARTHWORKS ESTIMATES

G02

SHEET # 2 OF 22



LEGEND:

— – – — APPROXIMATE EASEMENT

NOTE:

1. EXISTING FEATURES DEPICTED BY AERIAL ON MONTGOMERY ISLAND MAY CHANGE PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM LOCATION OF EXISTING FEATURES PRIOR TO CONSTRUCTION.

90% DESIGN

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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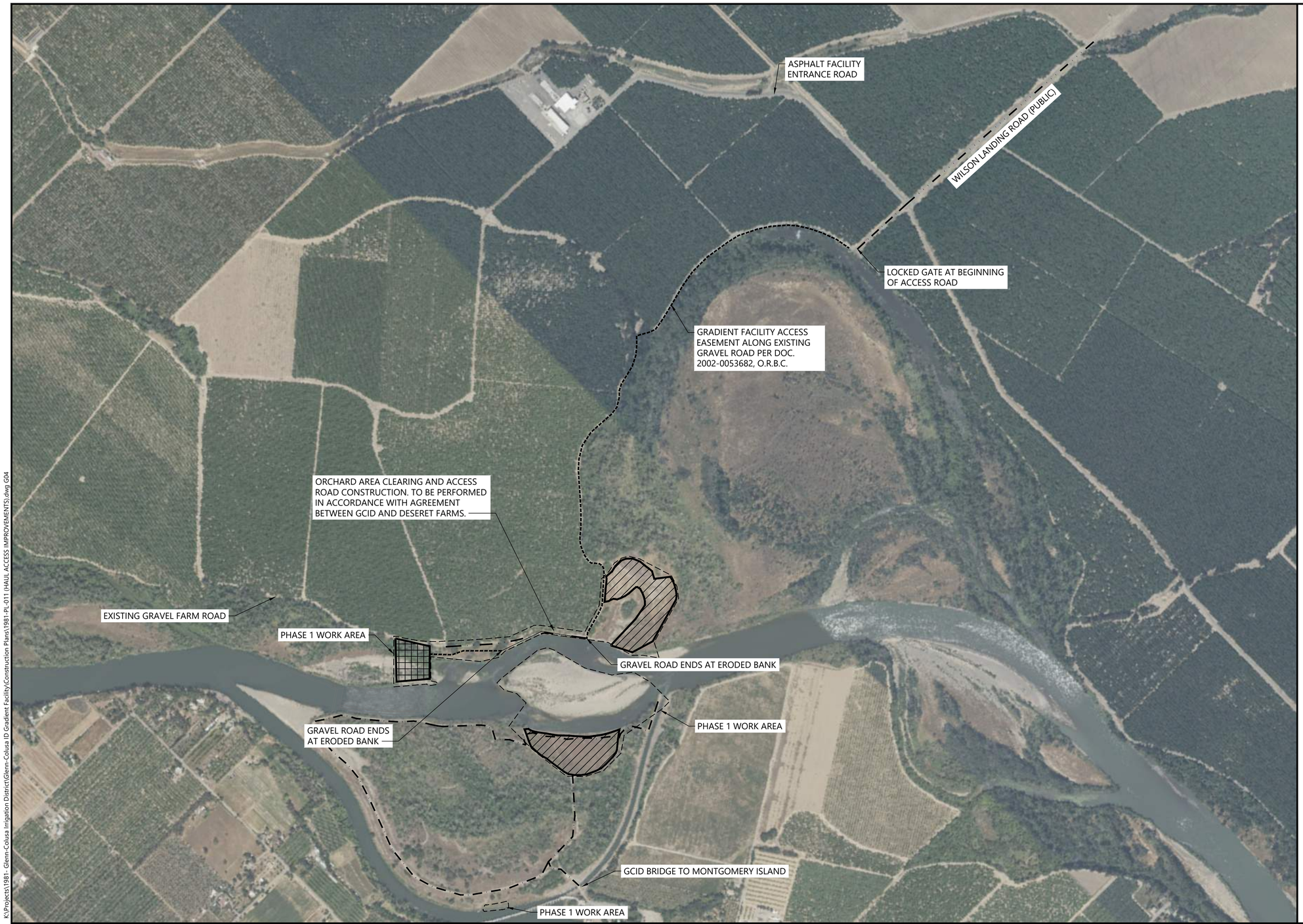
GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

EXISTING CONDITIONS - SITE OVERVIEW

G03

SHEET # 3 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-002 (EXIST COND-OVERVIEW).dwg G03
Nov 08, 2024 11:51am chewett



LEGEND:

- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD (GCID EASEMENT)
- EXISTING GRAVEL ROAD (MONTGOMERY ISLAND)
- EXISTING FARM ROAD
- POTENTIAL STAGING AREA FOR CONSTRUCTION
- WORK AREA TO BE CLEARED FOR PROJECT CONSTRUCTION
- PHASE 1 WORK AREA

NOTE: CONTRACTOR SHALL ACCESS SITE ON IDENTIFIED ROAD. NO ACCESS IS PERMITTED UNLESS FIRST APPROVED BY GCID AND DESERET FARMS.

NORTH

0 600 1200

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

SITE ACCESS

G04

SHEET # 4 OF 22

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-011 (HAUL ACCESS IMPROVEMENTS).dwg G04

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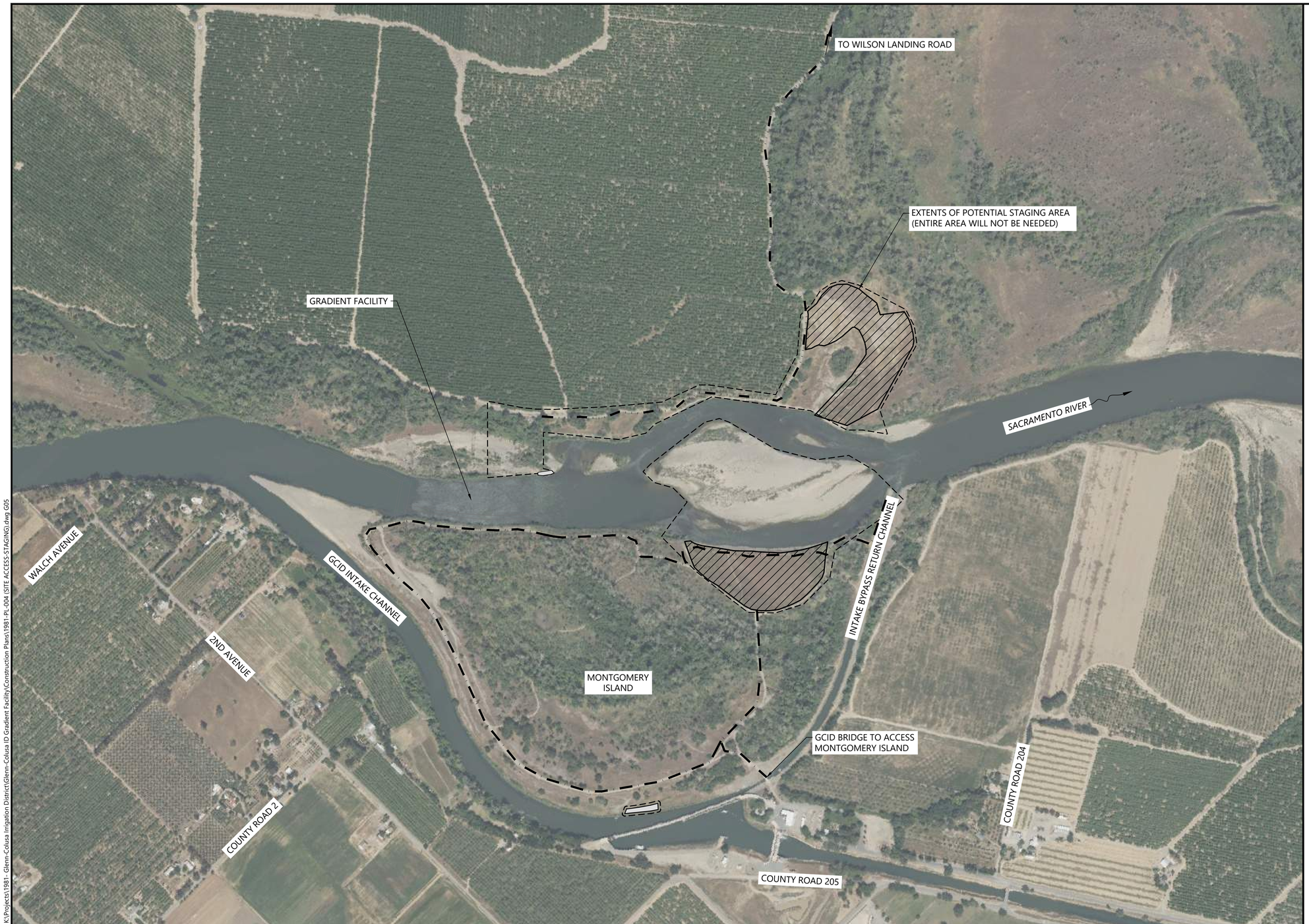

LEGEND:

- EXISTING ACCESS ROAD (NO IMPROVEMENTS)
- ACCESS ROAD TO BE IMPROVED BY CONTRACTOR
- STAGING AREA
- MITIGATION PLANTING AREA (SEE SHEETS L01 AND L02)
- PROJECT AREA

NOTE: REFER TO SHEET C11 FOR ACCESS ROAD IMPROVEMENT DETAILS.

NORTH

0 400 800

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-004 (SITE ACCESS-STAGING).dwg G05

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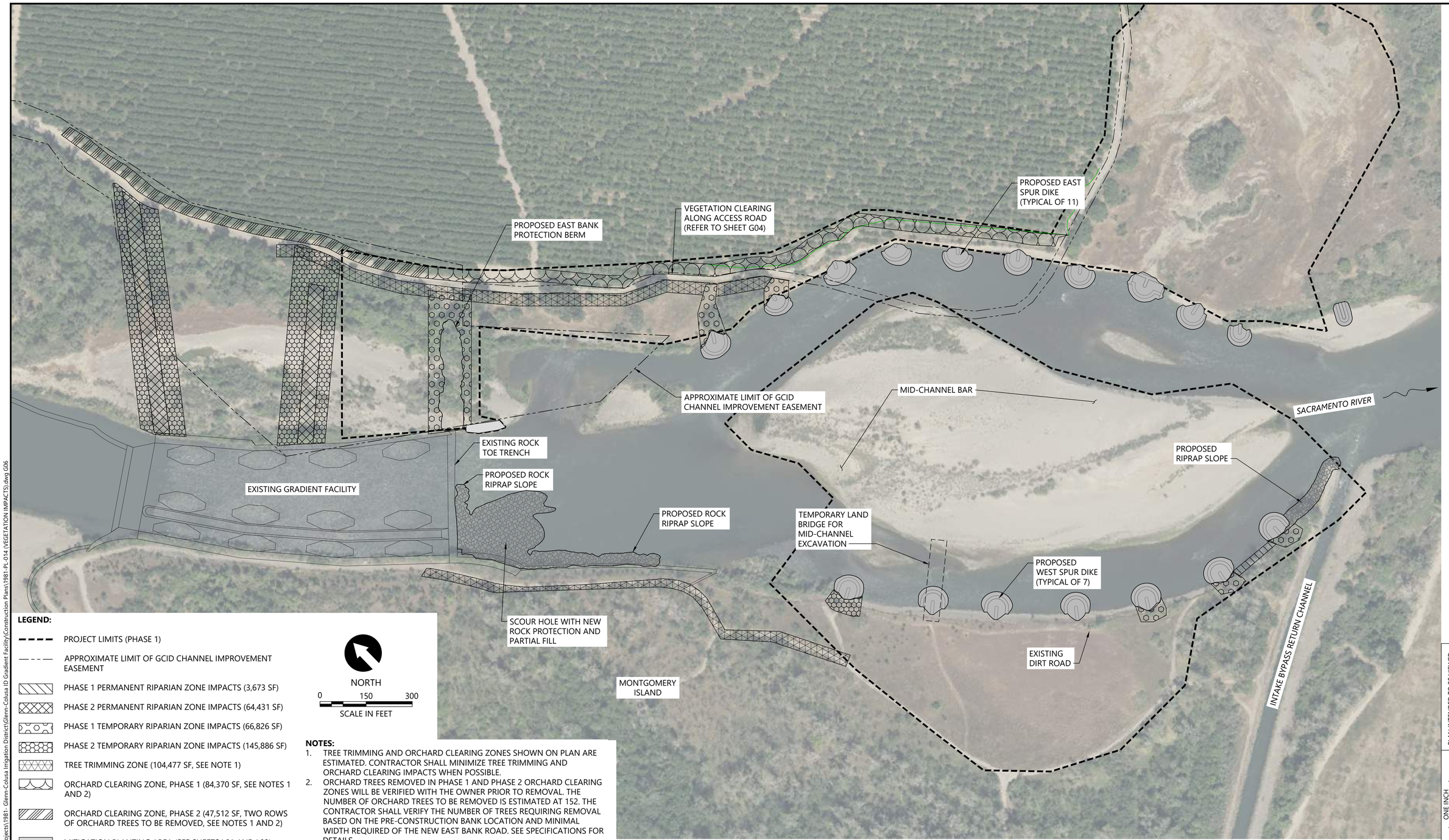
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

SITE STAGING, STOCKPILING, AND IMPROVEMENT PLAN

G05

SHEET # 5 OF 22



LEGEND:

- PROJECT LIMITS (PHASE 1)
- APPROXIMATE LIMIT OF GCID CHANNEL IMPROVEMENT EASEMENT
- PHASE 1 PERMANENT RIPARIAN ZONE IMPACTS (3,673 SF)
- PHASE 2 PERMANENT RIPARIAN ZONE IMPACTS (64,431 SF)
- PHASE 1 TEMPORARY RIPARIAN ZONE IMPACTS (66,826 SF)
- PHASE 2 TEMPORARY RIPARIAN ZONE IMPACTS (145,886 SF)
- TREE TRIMMING ZONE (104,477 SF, SEE NOTE 1)
- ORCHARD CLEARING ZONE, PHASE 1 (84,370 SF, SEE NOTES 1 AND 2)
- ORCHARD CLEARING ZONE, PHASE 2 (47,512 SF, TWO ROWS OF ORCHARD TREES TO BE REMOVED, SEE NOTES 1 AND 2)
- MITIGATION PLANTING AREA (SEE SHEETS L01 AND L02)

NORTH

0 150 300

SCALE IN FEET

NOTES:

1. TREE TRIMMING AND ORCHARD CLEARING ZONES SHOWN ON PLAN ARE ESTIMATED. CONTRACTOR SHALL MINIMIZE TREE TRIMMING AND ORCHARD CLEARING IMPACTS WHEN POSSIBLE.
2. ORCHARD TREES REMOVED IN PHASE 1 AND PHASE 2 ORCHARD CLEARING ZONES WILL BE VERIFIED WITH THE OWNER PRIOR TO REMOVAL. THE NUMBER OF ORCHARD TREES TO BE REMOVED IS ESTIMATED AT 152. THE CONTRACTOR SHALL VERIFY THE NUMBER OF TREES REQUIRING REMOVAL BASED ON THE PRE-CONSTRUCTION BANK LOCATION AND MINIMAL WIDTH REQUIRED OF THE NEW EAST BANK ROAD. SEE SPECIFICATIONS FOR DETAILS.
3. SEE SPECIFICATION SECTION 31 10 00 FOR MORE INFORMATION.

90% DESIGN

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS

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CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
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GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

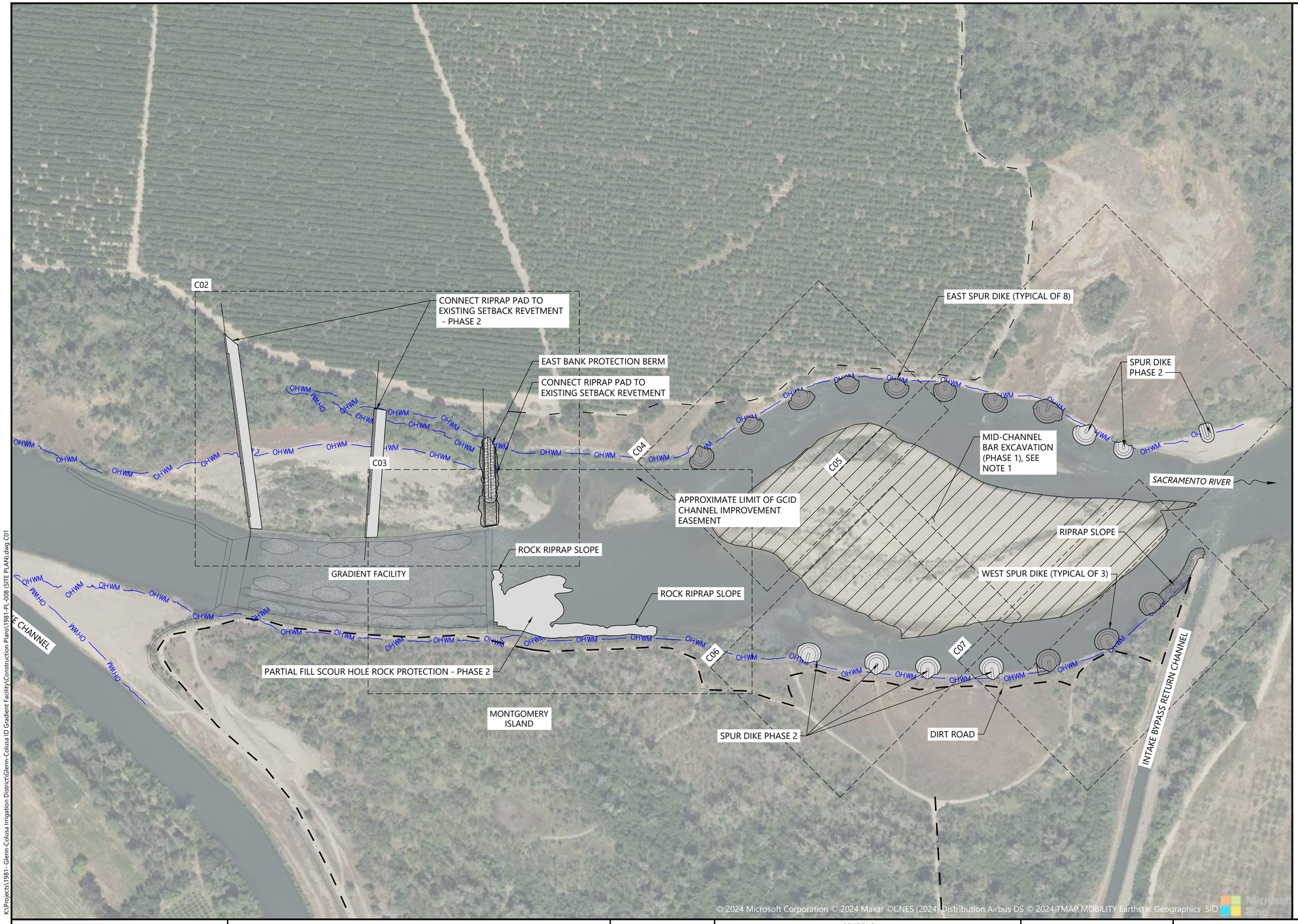
SITE CLEARING AND VEGETATION IMPACT AREAS

G06

SHEET # 6 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-014 (VEGETATION IMPACTS).dwg G06

Nov 08, 2024 11:51am chewett



LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING ACCESS ROAD (NO IMPROVEMENTS)
- ACCESS ROAD TO BE IMPROVED BY CONTRACTOR
- SPUR DIKE (PHASE 1)
- SPUR DIKE (PHASE 2)
- RIPRAP PLACEMENT (PHASE 1)
- RIPRAP PLACEMENT (PHASE 2)
- MID-CHANNEL GRAVEL BAR EXCAVATION (PHASE 1)

NOTES:

1. MID-CHANNEL GRAVEL BAR EXCAVATION EXTENTS TO BE DETERMINED IN THE FIELD. SEE SPECIFICATIONS FOR MORE INFORMATION.

NORTH

0 200 400

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-008 (SITE PLAN).dwg C01

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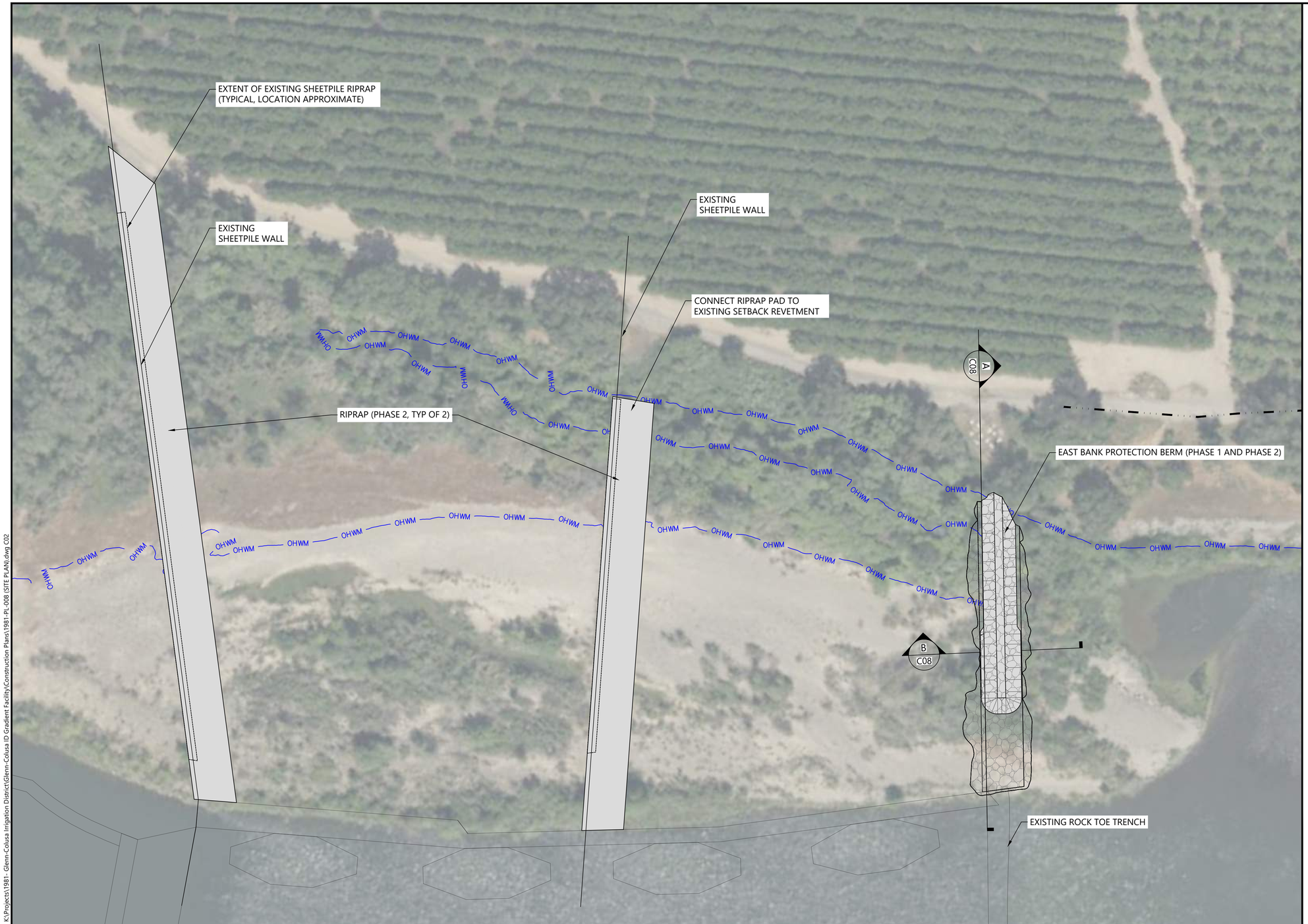
GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

SITE PLAN

C01

SHEET # 7 OF 22



LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING ACCESS ROAD (NO IMPROVEMENTS)
- ACCESS ROAD TO BE IMPROVED BY CONTRACTOR
- RIPRAP PLACEMENT (PHASE 1)
- RIPRAP/BERM PLACEMENT (PHASE 2)

NORTH

0 60 120

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-008 [SITE PLAN].dwg C02

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DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

EAST OVERBANK PROTECTION

C02

SHEET # 8 OF 22

EXTENT OF EXISTING SHEETPILE RIPRAP (TYPICAL LOCATION APPROXIMATE)

EAST BANK PROTECTION BERM (PHASE 2)

CONNECT RIPRAP PAD TO EXISTING SETBACK REVETMENT

RIPRAP (PHASE 2)

APPROXIMATE LIMIT OF GCID CHANNEL IMPROVEMENT EASEMENT

EXISTING ROCK TOE TRENCH

ROCK RIPRAP SLOPE (PHASE 2)

PARTIAL FILL SCOUR HOLE ROCK PROTECTION (PHASE 2)

GRADIENT FACILITY

ROCK RIPRAP SLOPE (PHASE 2)

MONTGOMERY ISLAND

CLEAR TREES ON BANK FOR CONSTRUCTION ACCESS, REPAIR EXISTING ROCK SLOPE THAT IS DAMAGED AFTER CONSTRUCTION BY PLACING NEW RIPRAP TO FORM CONTINUOUS ROCK SLOPE TO TOP OF BANK (PHASE 2)

LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING ACCESS ROAD (NO IMPROVEMENTS)
- CONTOURS (1' AND 5' INTERVAL)
- RIPRAP PLACEMENT (PHASE 1)
- RIPRAP/BERM PLACEMENT (PHASE 2)

NORTH

0 50 100

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-005c (SCOUR HOLE STABILIZATION).dwg C03
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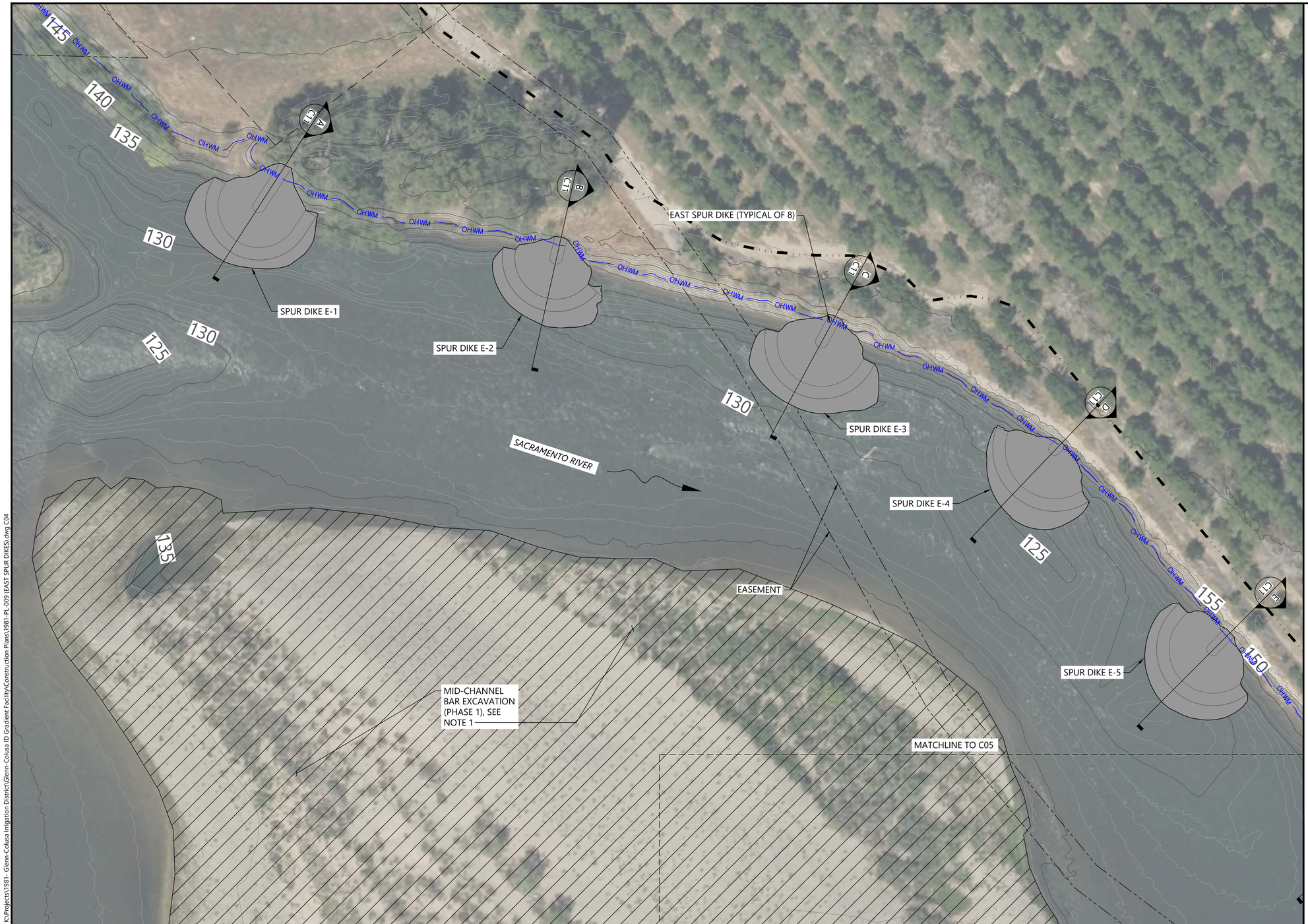
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

SCOUR HOLE STABILIZATION (PHASE 2)

C03

SHEET # 9 OF 22



LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING EASEMENT
- EXISTING ACCESS ROAD TO BE IMPROVED BY CONTRACTOR
- CONTOURS (1' AND 5' INTERVALS)
- SPUR DIKE (PHASE 1)
- MID-CHANNEL GRAVEL BAR EXCAVATION (PHASE 1)

NOTES:

1. MID-CHANNEL GRAVEL BAR EXCAVATION EXTENTS TO BE DETERMINED IN THE FIELD. SEE SPECIFICATIONS FOR MORE INFORMATION.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

EAST BANK SPUR DIKES (1-5)

C04

SHEET # **10** OF **22**

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-009 (EAST SPUR DIKES).dwg C04

Nov 08, 2024 11:52am chewett

LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING EASEMENT
- EXISTING ACCESS ROAD TO BE IMPROVED BY CONTRACTOR
- CONTOURS (1' AND 5' INTERVALS)
- SPUR DIKE (PHASE 1)
- SPUR DIKE (PHASE 2)
- PLACEMENT AREA FOR EXCAVATED MATERIAL
- MID-CHANNEL GRAVEL BAR EXCAVATION (PHASE 1)

NOTES:

1. MID-CHANNEL GRAVEL BAR EXCAVATION EXTENTS TO BE DETERMINED IN THE FIELD. SEE SPECIFICATIONS FOR MORE INFORMATION.

NORTH

0 60 120

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

EAST BANK SPUR DIKES (6-11)

C05

SHEET # 11 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-009 (EAST SPUR DIKES).dwg C05

Nov 08, 2024 11:52am chewett

LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING EASEMENT
- CONTOURS (1' AND 5' INTERVALS)
- SPUR DIKE (PHASE 2)

NORTH

0 40 80

SCALE IN FEET

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ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

WEST BANK SPUR DIKES (1-3, PHASE 2)

C06

SHEET # 12 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-010 (WEST SPUR DIKES).dwg C06

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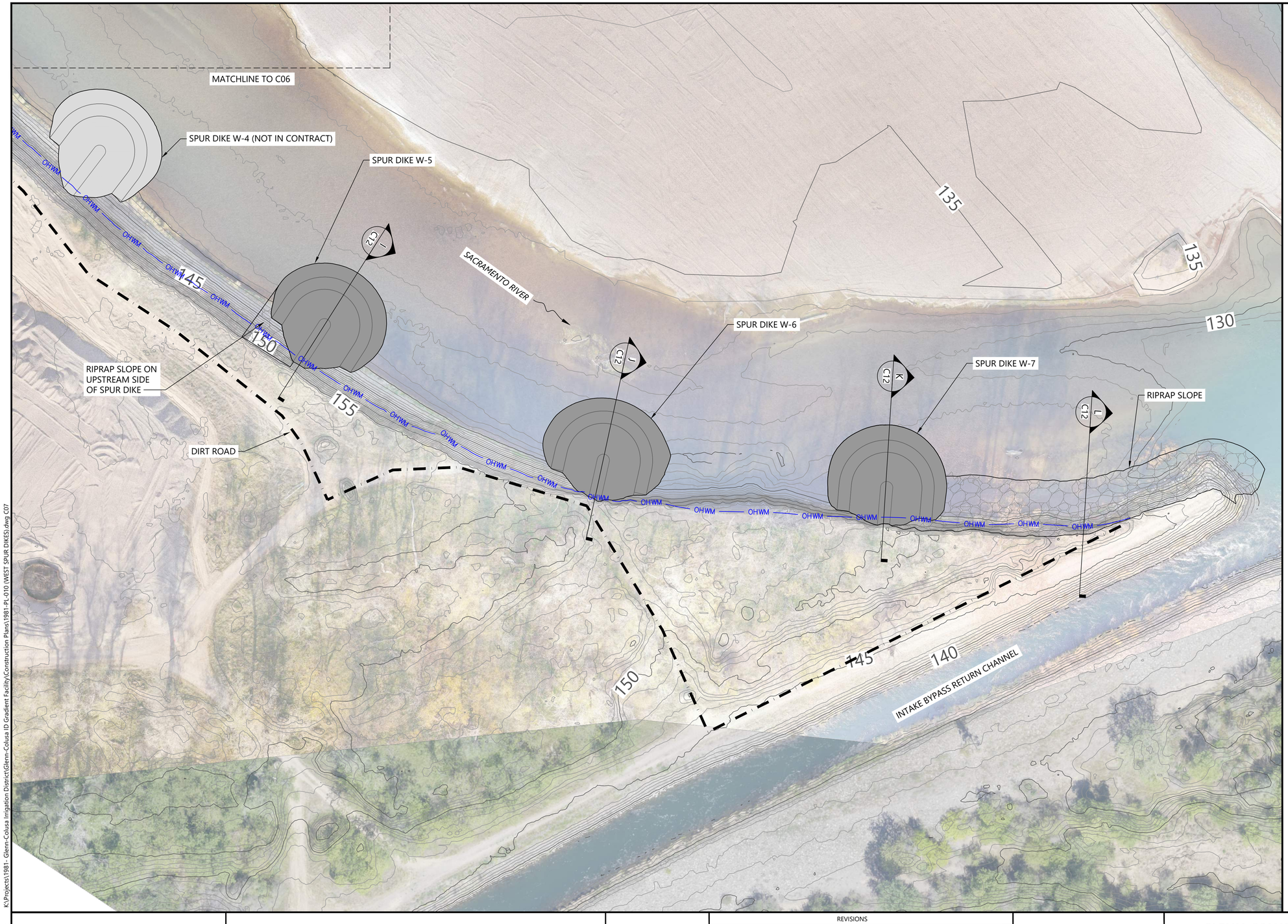

LEGEND:

- OHWM — ORDINARY HIGH WATER MARK
- EXISTING EASEMENT
- CONTOURS (1' AND 5' INTERVALS)
- RIPRAP PLACEMENT (PHASE 1)
- SPUR DIKE (PHASE 1)
- SPUR DIKE (PHASE 2)

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-010 (WEST SPUR DIKES).dwg C07

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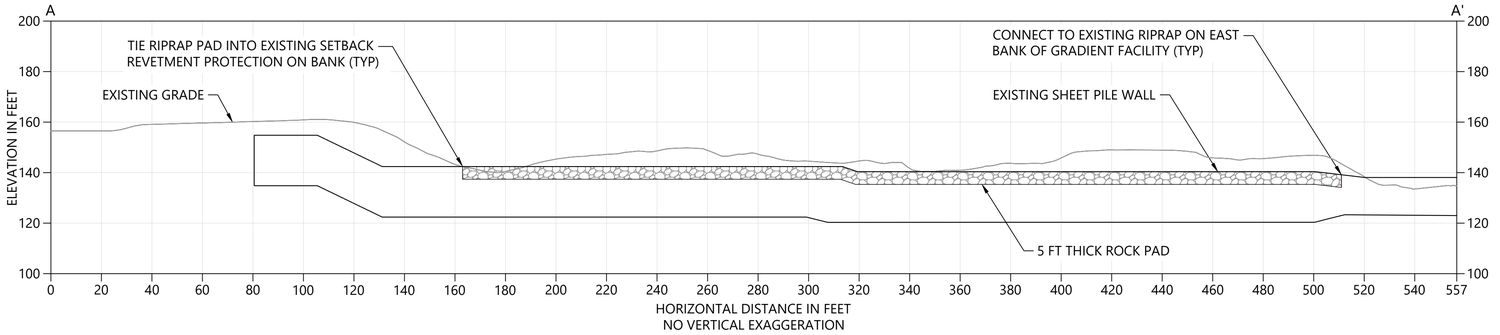
GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

WEST BANK SPUR DIKES (4-7 AND ROCK PROTECTION)

C07

SHEET # 13 OF 22



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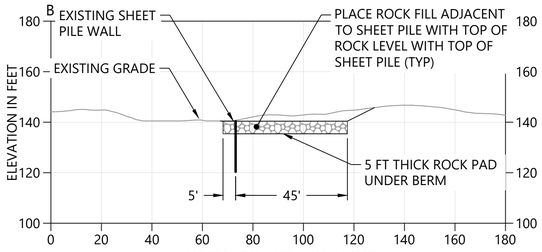

B / C02 SECTION B
SCALE: 1" = 30'

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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APPROVED BY: R. MONTGOMERY
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DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

EAST OVERBANK PROTECTION CROSS SECTIONS

C08

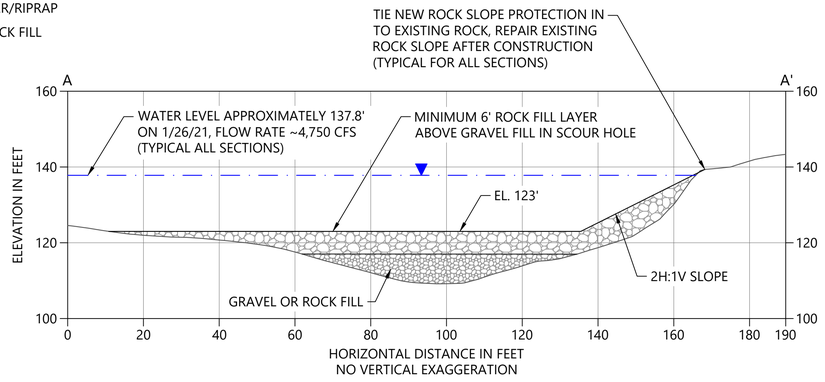
SHEET # **14** OF **22**

LEGEND:

ROCK FILL LAYER/RIPRAP

GRAVEL OR ROCK FILL

NOTE: REFER TO SPECIFICATIONS SECTIONS 31 20 00 EARTHMOVING AND 35 31 19 WATERWAY BANK PROTECTION FOR MORE INFORMATION ON AGGREGATES.



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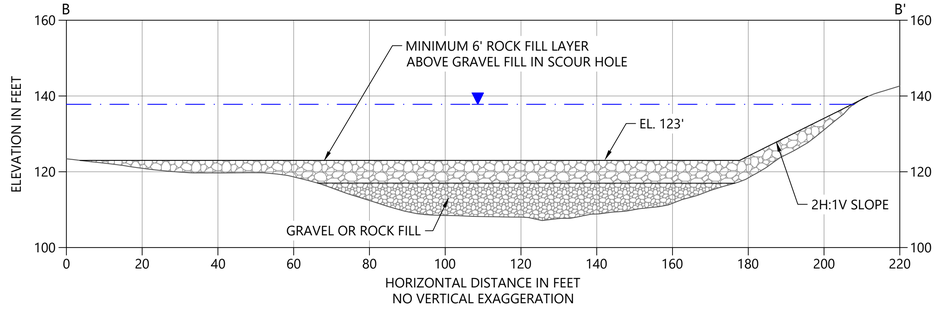

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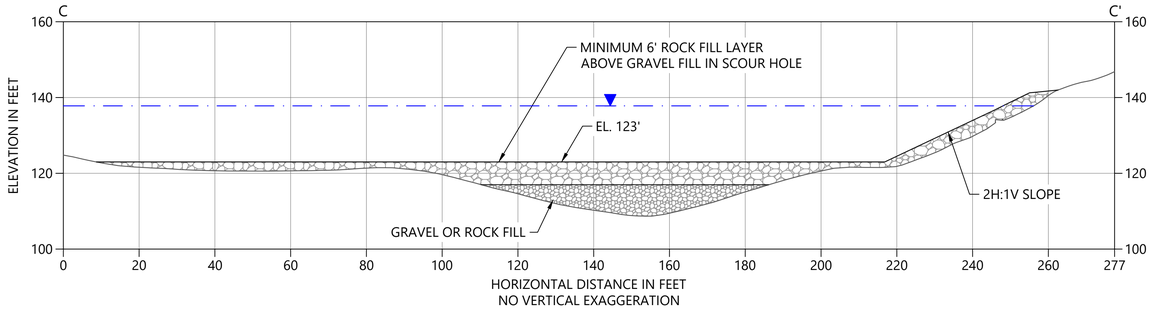
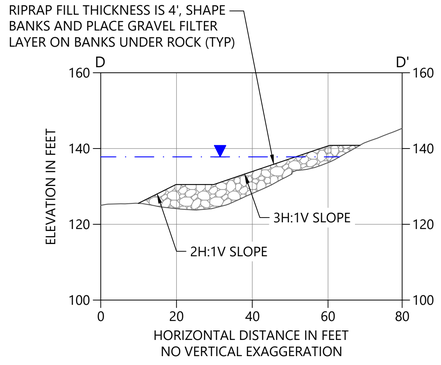


C C03 SECTION C
SCALE: 1" = 20'



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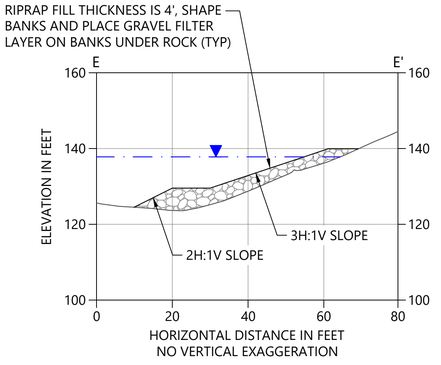

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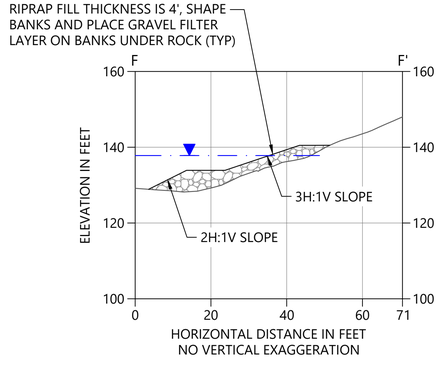

F C03 SECTION F
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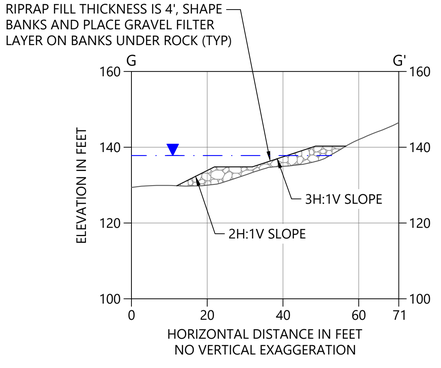
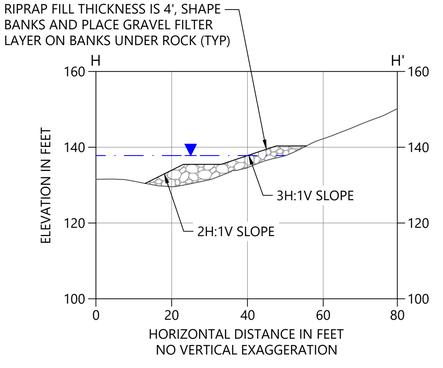
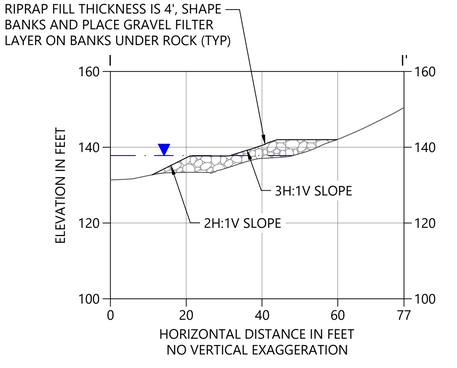


G C03 SECTION G
SCALE: 1" = 20'



H C03 SECTION H
SCALE: 1" = 20'



I C03 SECTION I
SCALE: 1" = 20'

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. MONTGOMERY
DRAWN BY: C. HEWETT
CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: APRIL 2025

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

SCOUR HOLE STABILIZATION
CROSS SECTIONS (PHASE 2)

C09

SHEET # 15 OF 22

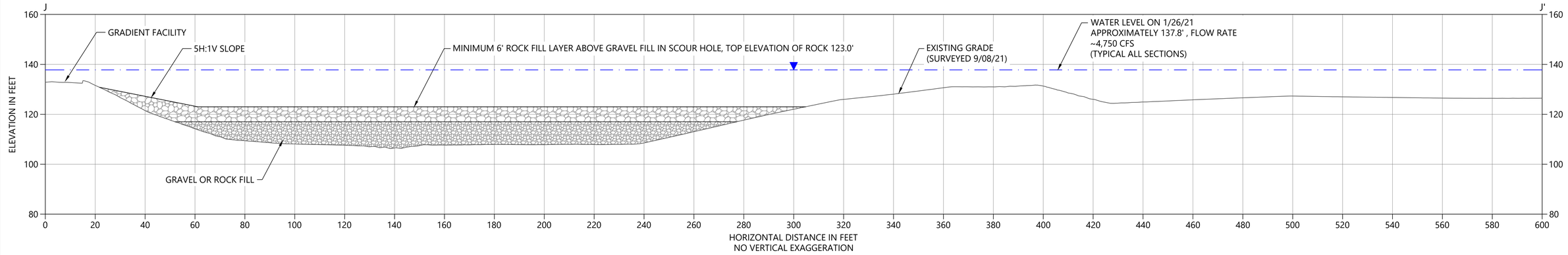
Sep 17, 2025 9:39pm chewett K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-006c (SCOUR HOLE SECTIONS).dwg C09

LEGEND:

ROCK FILL LAYER/RIPRAP

GRAVEL OR ROCK FILL

NOTE: REFER TO SPECIFICATIONS SECTIONS 31 20 00 EARTHMOVING AND 35 31 19 WATERWAY BANK PROTECTION FOR MORE INFORMATION ON AGGREGATES.



J / C14 SECTION J

SCALE: 1" = 20'

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

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90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

SCOUR HOLE STABILIZATION PROFILE (PHASE 2)

C10

SHEET # 16 OF 22

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-006c (SCOUR HOLE SECTIONS).dwg C10
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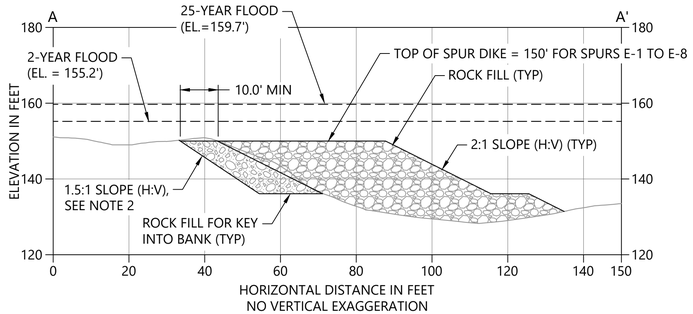

A / C04 PROFILE A - SPUR DIKE E-1
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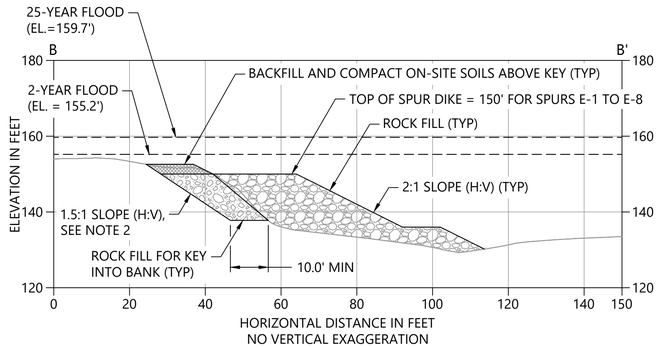

B / C04 PROFILE B - SPUR DIKE E-2
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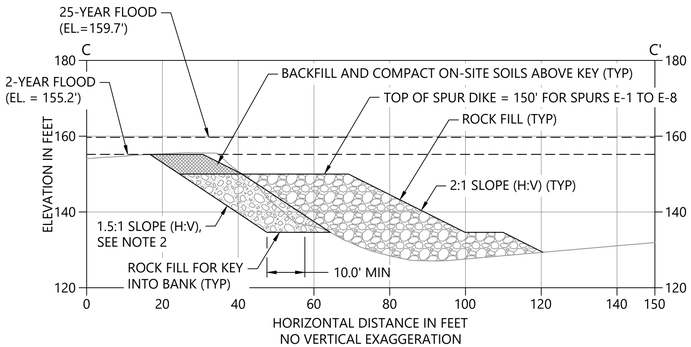

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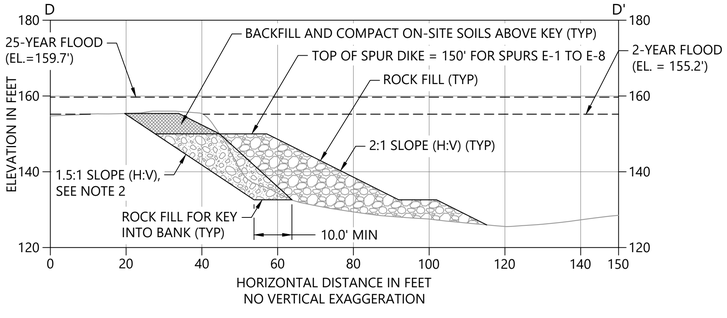

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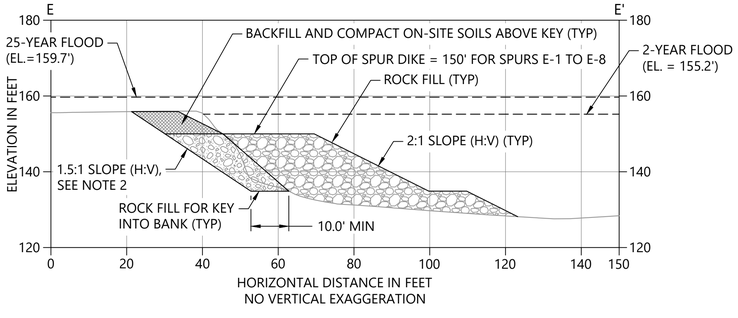
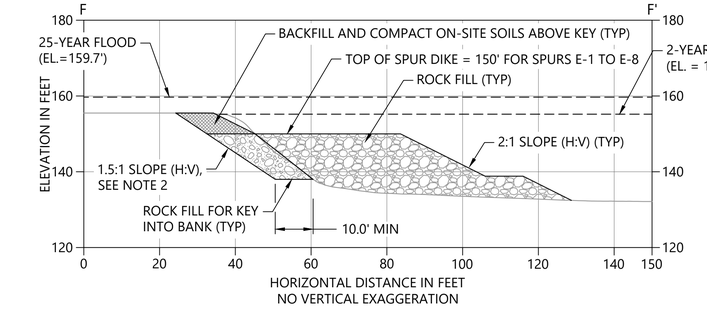
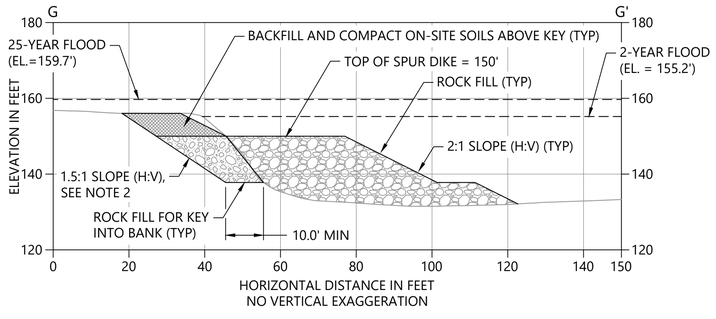
SCALE: 1" = 20'



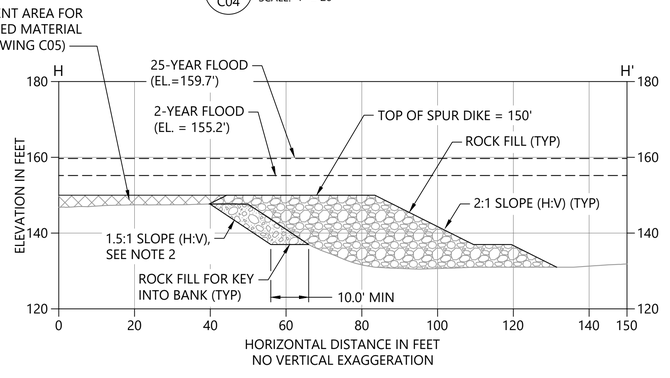
E / C04 PROFILE E - SPUR DIKE E-5
SCALE: 1" = 20'



F / C05 PROFILE F - SPUR DIKE E-6
SCALE: 1" = 20'



G / C05 PROFILE G - SPUR DIKE E-7
SCALE: 1" = 20'



H / C05 PROFILE H - SPUR DIKE E-8
SCALE: 1" = 20'

LEGEND

- ROCK FILL (KEY)
- ROCK FILL/RIPRAP
- ON-SITE SOILS
- PLACEMENT AREA FOR EXCAVATED MATERIAL

NOTES:

1. SIDE SLOPES ON CUT AND FILL OF ON-SITE SOILS ARE 2:1 AND THE SIDE SLOPES FOR ROCK KEY ARE 1.5:1.
2. ROCK FILL FOR KEY INTO BANK TO BE1.5:1 SLOPE (H:V) AS NEEDED TO HAVE MINIMUM 10 FT THICK ROCK KEY IN BANK, ROCK KEY TO HAVE BOTTOM ELEVATION NO HIGHER THAN 138.0'.

0 20 40
SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
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DRAWN BY: C. HEWETT
CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

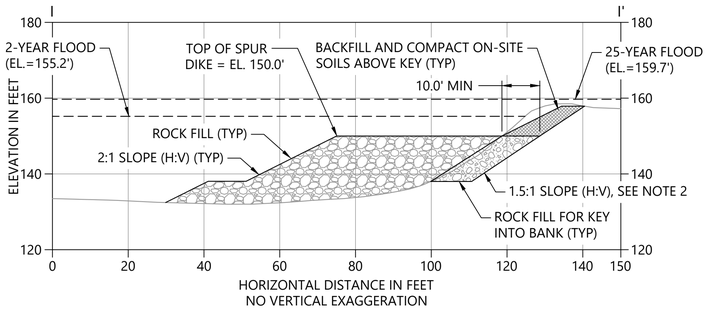
EAST BANK SPUR DIKE CROSS SECTIONS (SHEET 1 OF 2)

C11

SHEET # 17 OF 22

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-009 (EAST SPUR DIKES).dwg C11

Nov 08, 2024 11:54am chewett



I / C07 PROFILE I - SPUR DIKE W-5
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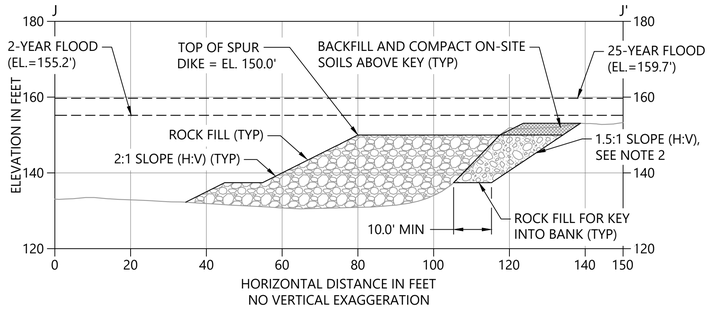
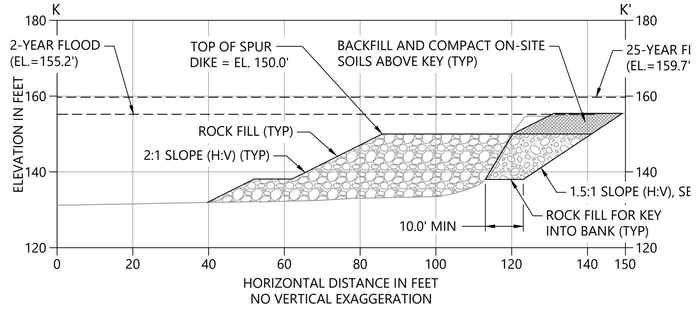


J / C07 PROFILE J - SPUR DIKE W-6
SCALE: 1" = 20'



K / C07 PROFILE K - SPUR DIKE W-7
SCALE: 1" = 20'

L / C07 PROFILE L - SPUR DIKE W-8
SCALE: 1" = 20'

LEGEND

- ROCK FILL (KEY)
- ROCK FILL/RIPRAP
- ON-SITE SOILS

NOTES:

1. SIDE SLOPES ON CUT AND FILL OF ON-SITE SOILS ARE 2:1 AND THE SIDE SLOPES FOR ROCK KEY ARE 1.5:1.
2. ROCK FILL FOR KEY INTO BANK TO BE1.5:1 SLOPE (H:V) AS NEEDED TO HAVE MINIMUM 10 FT THICK ROCK KEY IN BANK, ROCK KEY TO HAVE BOTTOM ELEVATION NO HIGHER THAN 138.0'.

0 20 40
SCALE IN FEET

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90% DESIGN

K:\Projects\1981- Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-010 (WEST SPUR DIKES).dwg C12
Nov 08, 2024 11:55am chewett

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

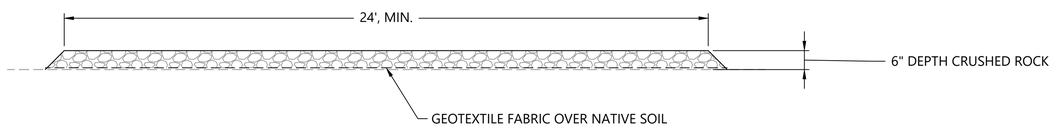
DESIGNED BY: R. MONTGOMERY
DRAWN BY: C. HEWETT
CHECKED BY: M. COLLINS
APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

WEST BANK SPUR DIKE CROSS SECTIONS

C12

SHEET # **18** OF **22**



1 / - TEMPORARY ACCESS ROAD IMPROVEMENTS
SCALE: NTS

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

90% DESIGN

ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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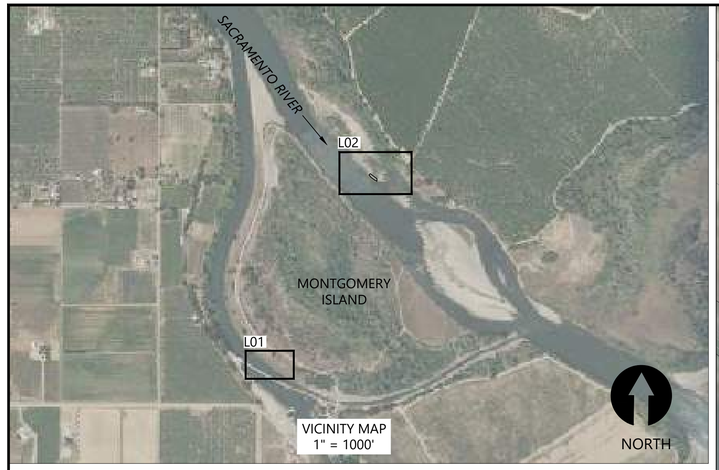
GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

TYPICAL DETAILS

C13

SHEET # **19** OF **22**

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-015 (DETAILS).dwg C13
Nov 08, 2024 11:55am chewett



MONTGOMERY ISLAND

170
165
160
155
150
145

SACRAMENTO RIVER

PLANTING SCHEDULE					
SPECIES NAME	COMMON NAME	STOCK TYPE AND SIZE	SPACING	NOTES	QUANTITY
TREES					
Acer negundo	BOXELDER	1-GALLON CONTAINER	12' O.C.	GROUP BY SPECIES, 3 TO 7 PLANTS PER GROUP. 1, 3 / L03	9
Alnus rhombifolia	WHITE ALDER	1-GALLON CONTAINER	12' O.C.		10
Fraxinus latifolia	OREGON ASH	1-GALLON CONTAINER	12' O.C.		9
Juglans hindsii	BLACK WALNUT	1-GALLON CONTAINER	12' O.C.		8
Platanus racemosa	WESTERN SYCAMORE	1-GALLON CONTAINER	12' O.C.		8
Quercus lobata	VALLEY OAK	1-GALLON CONTAINER	12' O.C.		22
SHRUBS					
Bacharris pilularis	COYOTE BRUSH	1-GALLON CONTAINER	6' O.C.	GROUP BY SPECIES, 3 TO 7 PLANTS PER GROUP. 1, 3 / L03	14
Rosa californica	CALIFORNIA ROSE	1-GALLON CONTAINER	6' O.C.		22
Rubus ursinus	CALIFORNIA BLACKBERRY	1-GALLON CONTAINER	6' O.C.		14
Sambucus mexiana	BLUE ELDERBERRY	1-GALLON CONTAINER	6' O.C.		2
HERBACEOUS					
Carex barbarae	SANTA BARBARA SEDGE	4-INCH POT	3' O.C.	2, 3 / L03	30
Vitis californica	CALIFORNIA GRAPE	1-GALLON CONTAINER	3' O.C.		30

NORTH

0 20 40

SCALE IN FEET

LEGEND:

EXISTING CONTOURS (1' AND 5' INTERVAL)

2023 MITIGATION SITE (APPROXIMATE)

PROPOSED UPLAND MITIGATION (MINIMUM. 11,000 SQ. FT)

NOTES:

1. ALL PLANTS TO BE SUPPLIED BY CONTRACTOR, REFER TO PLANTING SCHEDULE ON THIS SHEET.
2. INSTALL TREE SPECIES, SHRUB SPECIES, AND HERBACEOUS SPECIES IN GROUPINGS. REFER TO DETAIL 4, SHEET L03 FOR TYPICAL PLANTING PATTERN.
3. REFER TO SPECIFICATIONS FOR SOIL PREPARATION, FERTILIZER, PLANTING, AND WATERING REQUIREMENTS.
4. CONTRACTOR SHALL INSTALL TEMPORARY IRRIGATION FOR ALL PLANTING AREAS.
5. HORIZONTAL DATUM: CALIFORNIA STATE PLANE ZONE 2, US SURVEY FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

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90% DESIGN

ANCHOR QEA

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SCALE: AS NOTED
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GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

PLANTING PLAN (1 OF 2)

L01

SHEET # 20 OF 22

K:\Projects\1981 - Glenn-Colusa Irrigation District\Glenn-Colusa ID Gradient Facility\Construction Plans\1981-PL-016 (Planting).dwg L01

Nov 08, 2024 11:56am chewett

PROPOSED EAST BANK PROTECTION BERM (PHASE 1 AND PHASE 2)

SACRAMENTO RIVER

PLANTING SCHEDULE					
SPECIES NAME	COMMON NAME	STOCK TYPE	SPACING	NOTES	QUANTITY
WILLOW POLES					
Salix laevigata	RED WILLOW	POLE	2' O.C.	GROUP BY SPECIES, 3 TO 7 PLANTS PER GROUP.	501
Salix lasiolepis	ARROYO WILLOW	POLE	2' O.C.	4 / L03	501

LEGEND:

- EXISTING CONTOURS (1' AND 5' INTERVAL)
- EXISTING ORDINARY HIGH WATER LINE
- WETLAND ENHANCEMENT AREA: CLEAR AND GRUB INVASIVE VEGETATION AND INSTALL WILLOW POLES (3,470 SF)

NORTH

0 30 60

SCALE IN FEET

NOTES:

1. ALL PLANTS TO BE SUPPLIED BY CONTRACTOR, REFER TO PLANTING SCHEDULE ON THIS SHEET.
2. SEE DETAIL 5, SHEET L03 FOR WILLOW POLE PLANTING DETAIL.
3. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO INSTALLING WILLOW POLES.
4. REFER TO SPECIFICATIONS FOR SOIL PREPARATION, FERTILIZER, PLANTING, AND WATERING REQUIREMENTS.
5. CONTRACTOR SHALL INSTALL TEMPORARY IRRIGATION FOR ALL PLANTING AREAS.
6. HORIZONTAL DATUM: CALIFORNIA STATE PLANE ZONE 2, US SURVEY FEET.
7. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

90% DESIGN

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

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ANCHOR QEA

GCID Glenn-Colusa Irrigation District

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SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT GRADIENT FACILITY REHABILITATION

PLANTING PLAN (2 OF 2)

L02

SHEET # 21 OF 22

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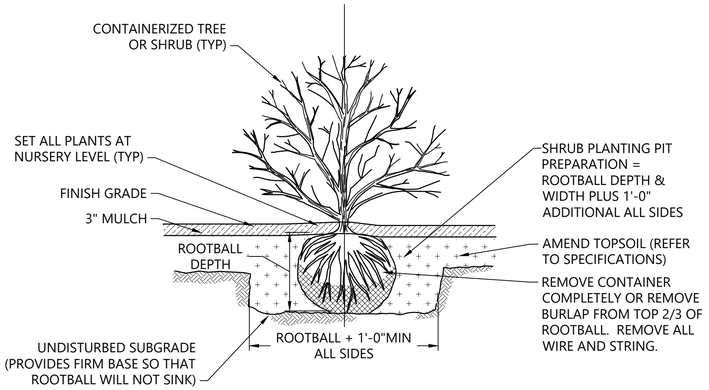
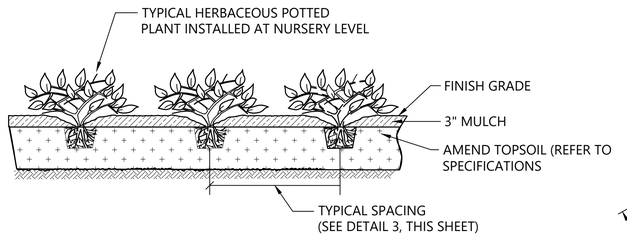
Nov 08, 2024 11:56am chewett



1 / L01 TREE AND SHRUB 1 GALLON PLANTING

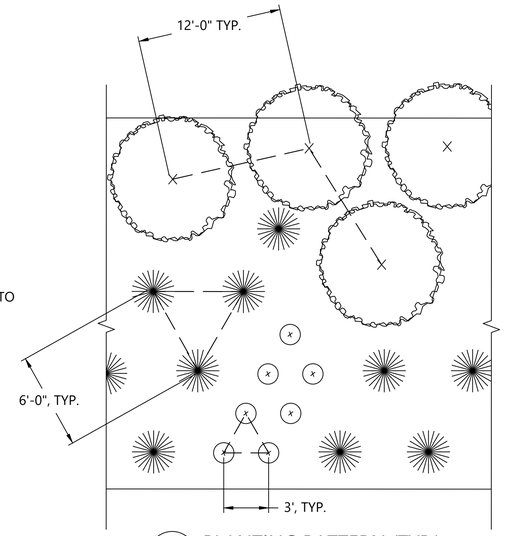
SCALE:NOT TO SCALE

1. INSTALL ALL TREES WITH GOPHER BASKET (REFER TO SPECIFICATIONS FOR DETAILS).



2 / L01 HERBACEOUS 4-INCH CONTAINER PLANTING

SCALE:NOT TO SCALE



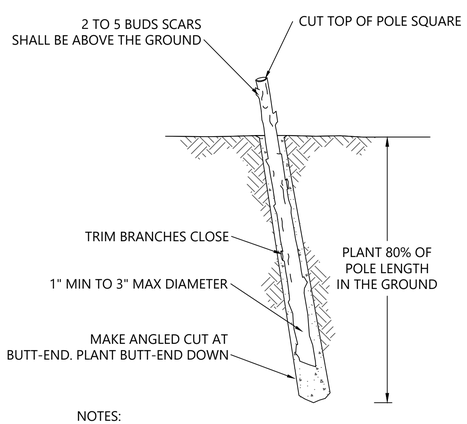
3 / L01 PLANTING PATTERN (TYP.)

SCALE: 1" = 5'

PLANTING TYPE	SPACING
TREE	12' O.C.
SHRUB	6' O.C.
HERBACEOUS	3' O.C.

GENERAL DETAIL NOTES:

1. SEE L01 FOR LIMITS OF PLANTING. REPEAT PLANT SPACING AS NEEDED TO ACHIEVE REQUIRED COVERAGE. SEE SPECIFICATIONS FOR DETAILS.
2. CONTRACTOR TO PROVIDE 10'X10' SAMPLE PLANT LAYOUT PLOT FOR OWNER APPROVAL PRIOR TO PLANT INSTALLATION.



NOTES:

1. 36" MIN. LENGTH WILLOW POLES.
2. HARVEST AND PLANT POLES DURING THE DORMANT SEASON.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE POLES OR SPLIT ENDS DURING INSTALLATION, USE A PILOT BAR TO CREATE SHAFT PRIOR TO INSTALLING POLES.
4. SOAK CUTTINGS CONTINUOUSLY PRIOR TO INSTALLATION.
5. TAMP THE SOIL AROUND THE POLE.
6. ONLY NURSERY GROWN STOCK SHALL BE USED. HARVESTING OF WILD PLANTS IS NOT ACCEPTABLE.
7. USE EQUAL NUMBER AND EVEN DISTRIBUTION OF EACH WILLOW SPECIES.

4 / L02 WILLOW POLE PLANTING

SCALE:NTS

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90% DESIGN

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ANCHOR QEA

GCID Glenn-Colusa Irrigation District

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: I. DOERSCHLAG
DRAWN BY: C. HEWETT
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APPROVED BY: R. MONTGOMERY
SCALE: AS NOTED
DATE: OCTOBER 2024

GLENN-COLUSA IRRIGATION DISTRICT
GRADIENT FACILITY REHABILITATION

PLANTING DETAILS

L03

SHEET # **22** OF **22**

Appendix B – Special Status Wildlife and Plant Species Lists

Table B-1
Special-Status Wildlife Species with Potential to Occur at the Project Site

Species Name Common Name	Status[1]	Habitat	Occurrence Potential
Invertebrates			
Desmocerus californicus Valley elderberry longhorn beetle	FT, CH	Inhabits elderberry plants below an elevation of 3,000 feet (910 meters); Eggs laid in hollow stems measuring 2 to 8 inches in diameter at the base of the shrub; larva may stay in this stage for up to 2 years before transforming into adults. Active period for adults occurs from March to June.	High—Suitable nesting habitat present; exit holes were observed
Bombus crotchii Crotch's Bumble Bee	SCE	Open grasslands and scrublands. Colonial nests are built underground. Food plants consist of Ascelepias, Chaenactis, Lupinus, Medicago, Phacelia, and Salvia.	High—Suitable nesting habitat present; suitable food plants present
Anthicus antiochensis Antioch Dunes anthicid beetle	SA	Stabilized interior riverine sand dunes and sand bars. Prefers sandy areas with bare, unvegetated cover.	Moderate— Suitable year-round foraging, breeding, refugia, and overwintering habitat present
Anthicus sacramento Sacramento anthicid beetle	SA	Stabilized interior riverine sand dunes and sand bars, and dredge soil heaps. Prefers sandy areas with some vegetated cover.	Moderate— Suitable year-round foraging, breeding, refugia, and overwintering habitat present
Bombus pensylvanicus Western bumble bee	SA	Open fields, grasslands, and farmlands. Host plants include Asclepias, Rubus, Cirsium, Oxalis, Lupinus, Vicia, Helianthus, Trifolium, and flowering trees including Prunus, Robinia and Salix.	Moderate—Suitable nesting habitat present; food plants present
Amphibians			
Spea hammondii Western spadefoot	FPT,SSC	Occurs primarily in sandy or gravelly soils in grasslands, mixed woodlands, foothills, chaparral, and mountainous areas. Breeds January through May; active from October to April following rain events. Requires temporary rain pools for reproduction and loose and friable soils for aestivation. Breeding occurs quickly following rain events; egg to transformation occurs in 8 to 16 days.	High—Suitable habitat present.
Reptiles			
Actinemys marmorata Northwestern pond turtle	FTP,SSC	Slow-moving rivers and streams, lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants.	High—Suitable habitat present within Sacramento River and suitable nesting habitat present in adjacent uplands.

Species Name Common Name	Status[1]	Habitat	Occurrence Potential
Birds			
Buteo swainsoni Swainson's hawk	ST	Open grasslands, shrublands, woodlands, and agricultural areas throughout the Central Valley and the valleys of the Sierra Nevada in Inyo and Mono counties.	Moderate—Suitable nesting habitat present; no known nests presently occur.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FT, CH, SE	Open woodlands, cottonwood and willow riparian forests, walnut and almond orchards, parks, and gardens. Associated with riparian zones often with blackberry, nettle, or wild grape understory.	Moderate—Suitable nesting habitat present; detected in the project area
Elanus leucurus White-tailed kite	FP	Grasslands, agriculture fields, oak woodlands, savannah and riparian habitats in rural and urban areas.	Moderate—Suitable nesting trees present; suitable foraging habitat present; no known nests presently occur
Haliaeetus leucocephalus Bald eagle	SE, FP	Lakes, reservoirs, river systems and some rangelands and coastal wetlands. Nests in large conifers within one mile of aquatic sources.	High—Suitable nesting and foraging habitat present; an active nest was observed May 2021 and may be used annually
Riparia riparia Bank swallow	ST	Nests in colonies in vertical banks with friable soils of sand or gravel. Most of California's nesting colonies occur along the upper Sacramento River.	Moderate—No current suitable habitat and have not been observed nesting or showing any interest in the area in 2025. However, bank swallow nesting habitat is highly dynamic and closely tied to the natural flow patterns and sediment movement typical of alluvial river systems leading to temporal nest site suitability.
Baeolophus inornatus Oak titmouse	BCC-CC	Primarily an oak obligate species – oak woodlands, oak savannahs, piñyon and juniper woodlands and occasionally suburban areas with oaks.	High— Suitable nesting habitat present; observed on site January 10, 2025, and can be expected to nest, forage, and disperse year-round within the study area
Icterus bullockii Bullock's oriole	BCC-CC	Riparian and oak woodlands, farmlands, and orchards. Prefers sycamores, cottonwoods, willows, and live oaks.	High— Suitable nesting habitat present; can be expected to nest and forage from March through September within the study area

Species Name Common Name	Status[1]	Habitat	Occurrence Potential
Pandion haliaetus Osprey	WL	Rivers, lakes and coastal habitats.	High— Suitable nesting and foraging habitat present; no known nests present, but ospreys have been recently observed soaring and foraging in the study area
Picoides nuttallii Nuttall's woodpecker	BCC-CC	Oak woodland and mixed riparian woodlands.	High— Suitable nesting habitat present; observed on site January 10, 2025, and can be expected to nest, forage, and disperse year-round within the study area
Spinus lawrencei Lawrence's goldfinch	BCC-CC	Arid oak/pine woodlands, foothills and chaparral.	Moderate—Suitable nesting and foraging habitat present
Mammals			
Antrozous pallidus Pallid bat	SSC WBWG-L	Rocky terrain in open areas in lowlands, foothills and mountainous areas. Roosts in caves, rock crevices, mines, hollow trees (e.g. coast redwoods, giant sequoias, oaks, exfoliating Ponderosa pine and valley oak bark, and fruit trees), buildings and bridges in arid regions.	High—Suitable roosting and foraging habitat present
Lasionycteris noctivagans Silver-haired bat	SA WBWG-M	Conifer and mixed conifer forests, especially old growth throughout the mountainous coastal and Sierra Nevada regions of northern California. Roosts in cavities and hollows in near the tops of trees and in caves.	High—Suitable roosting and maternity habitat present; Suitable foraging habitat present
Lasiurus cinereus Hoary bat	SA WBWG-M	Foliage rooster that prefers evergreens, but will use deciduous trees in forested habitats, particularly in edge habitat.	High—Suitable roosting and foraging habitat present
Lasiurus frantzii Western red bat	SSC WBWG-H	Primarily associated with intact riparian habitat. Roosts individually in foliage within trees along riparian areas, orchards and suburban areas.	High—Suitable roosting and foraging habitat present
Myotis evotis Long-eared myotis bat	SA WBWG-M	Brushy woodland habitats and coniferous forests up to 2,800 meters. Roosts in a variety of habitats including exfoliating bark, tree hollows, caves, rotten stumps, snags, cliff crevices and bridges.	Moderate—lack of suitable primary habitat, but suitable secondary roosting habitat present; Suitable foraging habitat present
Myotis yumanensis Yuma myotis bat	SA WBWG-L	A riparian obligate species. Inhabits riparian areas near permanent water sources. Roosts in a variety of habitats including bridges, buildings, caves, mines, cliff crevices and trees.	High—Suitable roosting and foraging habitat present

Species Name Common Name	Status[1]	Habitat	Occurrence Potential
Erethizon dorsatum North American porcupine	SA	Coniferous forests, woodlands, chaparral, and sagebrush vegetation communities.	High—Suitable roosting and foraging habitat present
Fish			
Oncorhynchus mykiss Central Valley Distinct Population Segment (DPS) steelhead	FT CH	Anadromous. Freshwater spawners. Spawns and rears in Sacramento River and its tributaries from fall to spring. Requires cool, swift, shallow water; clean, loose gravel for spawning; and runs and suitable large pools in which to rear and oversummer. Juveniles migrate to estuary and ocean in fall through spring to rear to adulthood, returning to spawn in 1 to 3 years.	High—The project area is within a reach of the Sacramento River that is primarily migratory corridor habitat for this species. Within Critical Habitat.
Oncorhynchus tshawytscha Central Valley spring-run ESU Chinook salmon	FT CH	Anadromous. Freshwater spawners. Spawns and rears in mainstem Sacramento River and suitable perennial tributaries late summer and early fall. Requires cool to cold year-round water temperatures and deep pools for adult over-summer and juvenile rearing habitat. Spawns in riffles with gravel and cobble substrate. Juveniles migrate to estuary and ocean from ages 0 to 1 in winter and spring to rear to adulthood, returning to spawn in 2 to 4 years.	High—The project area is within a reach of the Sacramento River that is primarily migratory corridor habitat for this species. Within Critical Habitat.
Oncorhynchus tshawytscha Sacramento River Winter-run ESU Chinook salmon	FE/SE CH	Anadromous. Freshwater spawners. Spawns and rears in mainstem Sacramento River and Battle Creek. Requires cool to cold year-round water temperatures because spawning occurs during the summer. Requires deep pools and riffles with clean gravel and cobble substrate to spawn. Juveniles migrate to estuary and ocean in fall and spring to rear to adulthood, returning to spawn in 2 to 3 years.	High—The project area is within a reach of the Sacramento River that is primarily migratory corridor habitat for this species. Within Critical Habitat.
Acipenser medirostris SDPS Green sturgeon	FT/SSC CH	Anadromous. Freshwater spawners. Spawns and rears in mainstem Sacramento River. Requires deep, fast run habitats with beds of sand and small gravel for optimal spawning and egg survival. Juveniles rear for a short time after hatching and then emigrate to estuary and ocean to rear to adulthood, returning to spawn.	High—The project area is within a reach of the Sacramento River that is migration, staging, spawning, and rearing habitat for this species. Within Critical Habitat.

Source: GCID 2025a, Sapere Environmental 2025

Notes:

Explanation of State, Federal, and other listing codes:

CH Critical Habitat (Proposed or Final) is designated
FE Federally listed as Endangered
FPT Federally proposed for listing as Threatened
FT Federally listed as Threatened

SA "Special Animals" is a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species". The Department of Fish and Game considers the taxa on this list to be those of greatest conservation need.
SE State listed as Endangered
ST State listed as Threatened
SCE State candidate for listing as Endangered
SSC California Species of Special Concern
FP Fully Protected
WL Watch List

BCC (-CC) USFWS Birds of Conservation Concern. List of migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the Service's highest conservation priorities. CC – Coastal California Terrestrial Bird Conservation Region

WBWG (H, M, L, MH, ML) The Western Bat Working Group. H - High Priority indicates species that are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology, and known threats; M – Medium Priority indicates a lack of information to assess the species' status; L – Low Priority indicates relatively stable populations based on available data. The WBWG also uses intermediary designations including MH – Medium-High and LM – Low-Medium priorities

Table B-2
Special-Status Plant Species Considered for Occurrence Within the Study Area

Common Name	Scientific Name	California Rare Plant Rank	Blooming Period	Habitat	Potential to Occur
Mexican mosquito fern	*Azola microphylla*	4.2 (limited distribution)	April but observable March through July	Ponds, slow streams, back water areas in rivers. Grows in freshwater. <1200 m. This species is known to occur in ditches tributary to the Sacramento River, regionally on the east side of the Sacramento River flood plain.	Potential to occur in backwaters of the Sacramento River. No potential outside the aquatic habitat of the Sacramento River.
Thread leaf beakseed	*Bulbostylis capillaris*	4.2 (limited distribution).	June-August	This species occurs in open damp, dry sandy-gravelly soil. Is primarily known from the Sierra Nevada foothills east from the study area. A record for occurrence attributed to CDFW during a survey in 2009 identifies it being present south from the study area on the east terrace of the Sacramento River approximately 1700 linear feet to the south. 300-2200 m.	Potential to occur along the sandbars of the east bank
Silky cryptantha	*Cryptantha crinita*	1B.2 (rare, threatened, or endangered in California and elsewhere).	April - May	Rocky volcanic flats, gravelly streambanks, gravel bars, generally foothill woodland. 90–1120 m. This species has been observed historically (1979 and 1954) on the gravel bar of Dibble Creek, north of Red Bluff.	Potential habitat on the banks of the Sacramento River and on the eastern sand bar.

Common Name	Scientific Name	California Rare Plant Rank	Blooming Period	Habitat	Potential to Occur
Dwarf downingia	*Downingia pusilla*	2B.2 (rare, threatened, or endangered in California, common elsewhere)	March through May	Vernal pools, roadside ditches. <+/-150 m. Recorded southeast of Vina, east of Highway 99 in vernal pools.	No potential for occurrence within the study area with a lack of vernal pools.
Shield-bracted monkey flower	*Erythranthe glaucescens*	4.3 (limited distribution)	February through August	Seepage areas. <600 m. South bank Mill Creek, 0.3 mile east of confluence with Sacramento River; gravel bar in active channel, April 2005. At Cone Grove Park in Antelope Creek in drying side channels amongst cobbles and in sand and soil pockets, May 2008. Small, rocky, ephemeral stream in blue oak woodland west side of Sacramento River, northwest from Flores Ave and I-5, April 2006.	Habitat is present to support this species along the off-channel riparian areas potentially on the eastern sandbar.
Hoover's spurge	*Euphorbia hooveri*	1B.2 (rare, threatened, or endangered in California and elsewhere).	April (July through September)	Vernal pools. Observed east and west from Sacramento River basin within annual grasslands supporting vernal pool complexes.	No potential for occurrence within the project area with a lack of vernal pool habitat.
Hogwallow starfish	*Hesperevax caulescens*	4.2 (limited distribution).	March through June	Drying shrink swell clay of vernal pools, flats, steep slopes. <500 m. Observed in the toe of the Sierra Nevada foothills and on the western side of the upper Sacramento River valley. Endemic to vernal pools.	Riverbanks and terraces above OHWM are unlikely to support this species. Active river is not suitable habitat.

Common Name	Scientific Name	California Rare Plant Rank	Blooming Period	Habitat	Potential to Occur
Woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	1B.2 (rare, threatened, or endangered in California and elsewhere)	June through September, distinctive vegetation and old seed pods can be identified outside blooming period.	Marshes and swamps (freshwater). Microhabitat: moist, freshwater-soaked riverbanks, and low peat islands in sloughs; can also occur on riprap and levees. In California, known from the Delta watershed and Sacramento River. 0–155 m. Associated with Scirpus sp., Typha angustifolia, and Iris pseudacorus. Calflora shows a location upstream and downstream from the study area in 1997 and 2003 respectively. The southern record details this plant occurring within 0.3 mile of the study area.	Potential habitat exists in the backwater of the eastern sandbar near the beaver lodge and in slower moving water areas on the west bank wetlands.

Notes:

Rare Plant Rank 1B.1: rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Rare Plant Rank 1B.2: rare, threatened, or endangered in California and elsewhere; fairly threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Rare Plant Rank 2B.1: rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Rare Plant Rank 2B.2: rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Rare Plant Rank 2B.3: rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Source: CDFW 2025