Water Quality Assessment Report

Airport Boulevard Bridge Replacement Project

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Riverside County, California

District 8 – RIV

BRLS-5956(231)

October 2022

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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STATE OF CALIFORNIA
Department of Transportation

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Executive Summary

The County of Riverside Transportation Department (County) in cooperation with the State of California Department of Transportation (Caltrans) and City of Coachella Valley (City) has determined that there is a need for bridge improvements on the existing Airport Boulevard Bridge over the Whitewater River (Br. No. 56C-0020). The Airport Boulevard Bridge is located in the community of Thermal, in the County of Riverside, California.

The purpose of the Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to provide information, to the extent possible, for National Pollution Discharge Elimination System (NPDES) permitting. The document includes a discussion of the proposed Project, the physical setting of the Project area, and the regulatory framework with respect to water quality; it also provides data on surface and groundwater resources and the water quality of these waters within the Project area, describes water quality impairments and beneficial uses, and identifies potential water quality impacts/benefits associated with the proposed Project. The document then recommends avoidance and/or minimization measures to avoid potentially adverse impacts.

The Coachella Valley Storm Water Channel, the constructed downstream extension of the Whitewater River, is the main surface water feature within the Project area and will be impacted by the Project. The Coachella Valley Storm Water Channel will be referred to as the Whitewater River in this report. The proposed Project would replace the existing bridge over Whitewater River with a structure that meets current standards. The Project area is approximately 25 acres and will result in an approximately 0.34 acre increase of new impervious surface. The Project storm water drainage would be designed consistent with County requirements and the Caltrans Project Planning and Design Guide and Storm Water Management Plan. Temporary Best Management Practices (BMPs), including practices for erosion control, would be implemented during construction.

The Coachella Valley Stormwater Channel Improvement Project (CVWD Project) is a Coachella Valley Water District Project that is currently underway that includes improvements of the channel at the bridge location. The CVWD Project consists of lowering the riverbed by 5 feet and installing concrete lining from bank of bank underneath the existing bridge. It is anticipated that construction will take one year to complete. Although the channel will be modified, the Airport Boulevard Bridge Replacement Project is still occurring within the Whitewater River, a water of the United States (U.S.) and State. Therefore, permits are required for construction. Regulatory permits under the Clean Water Act (CWA) will be obtained, including a §401 Water Quality Certification and a §404 Nationwide Permit 14 for the discharge of dredged or fill material into waters of the U.S. and State. Additionally, a Fish and Game Code Section (§) 1602 will be obtained for Project effects to riparian habitats and the California Department of Fish and Wildlife (CDFW) jurisdictional floodplain areas. A NPDES Permit from the Regional Water Quality Control Board (RWQCB) will be obtained as well. Any further avoidance or minimization measures from regulatory permitting would be incorporated into the Project, and adherence to the requirements set forth in these permits will further minimize impacts to water quality and aquatic resources.

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List of Abbreviated Terms

§	Section
°F	degrees Fahrenheit
AADT	Annual Average Daily Traffic
BMPs	Best Management Practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGP	Construction General Permit
City	City of Coachella
County	County of Riverside Transportation Department
CVMSHCP	Coachella Valley Multiple Species Habitat Conservation Plan
CVWD	Coachella Valley Water District
CVWD Project	Coachella Valley Stormwater Channel Improvement Project
CWA	Clean Water Act
DSA	Disturbed Soil Area
EBL	Eligible Bridge List
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ESA	Environmentally Sensitive Area
HBP	Highway Bridge Program
LEDPA	least environmentally damaging practicable alternative
MS4s	Municipal Separate Storm Sewer Systems
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NPDES	National Pollutant Discharge Elimination System
Project	Airport Boulevard Bridge Replacement Project
QSD	Qualified Storm Water Pollution Prevention Plan Developer
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SM&I	Structure Maintenance and Investigations
SMARTS	Stormwater Multiple Application and Report Tracking System
SR	Sufficiency Rating
SWMP	Stormwater Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRP	Storm Water Resource Plan
SWRCB	State Water Resources Control Board
TMDLs	Total Maximum Daily Loads
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
UWA	Unified Watershed Assessment

WDRs	Waste Discharge Requirements
WPCP	Water Pollution Control Plan
WQAR	Water Quality Assessment Report

1. Introduction

1.1 Approach to Water Quality Assessment

The purpose of the WQAR is to fulfill the requirements of NEPA and CEQA, and to provide information for NPDES permitting. The document includes a discussion of the proposed Airport Boulevard Bridge Replacement Project (Project), the general environmental setting of the Project area, and the regulatory framework with respect to water quality; it also provides data on surface water and groundwater resources within the Project area and the water quality of these waters, describes water quality impairments and beneficial uses, and identifies potential water quality impacts/benefits associated with the proposed Project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

1.2 Project Description

The County in cooperation with Caltrans and the City proposes to replace the existing Airport Boulevard Bridge over the Whitewater River (State Br. No. 56C-0020). The Airport Boulevard Bridge is located in the community of Thermal, in the County of Riverside, California (Figure 1. Project Location and Figure 2. Project Vicinity).

The proposed bridge work is consistent with the 2020-2045 Regional Transportation Plan (RTP) as published by the Southern California Association of Governments (SCAG). The Project is anticipated to utilize federal funds through the federal Highway Bridge Project (HBP), as such it requires compliance with NEPA. Caltrans is the lead agency under NEPA and the County is the lead agency under CEQA. The City is a responsible agency under CEQA as the bridge is partially owned by the City as it is partially within City limits and City sphere of influence.

Purpose and Need

The purpose of the proposed Project is to update the existing facility to meet seismic, scour, flood, and design standards.

The need for the Project is outlined below:

- The existing bridge has reached its useful design life. The bridge has inadequate shoulder width, lane width and is found to be structurally inadequate to meet the basic required strength and resistance.
- The existing Airport Boulevard Bridge over Whitewater River needs to be replaced with a new bridge that will meet the current seismic, service load design standards, and provide an adequate facility for emergency response and general access across the Whitewater River.

Risk Level Assessment

The Construction General Permit (CGP) contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels are determined during the planning, design, and construction phases, and are based on Project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the

Risk Level determined. For example, a Risk Level 3 (highest risk) Project would require compulsory stormwater runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows. The risk level for this Project has been estimated as a Level 2 with low sediment risk and a high receiving water risk.

1.2.1 No Project Alternative

The No-Build Alternative would result in no modifications to the Airport Boulevard over Whitewater River Bridge. The existing bridge at Airport Boulevard over Whitewater River would remain functionally obsolete.

1.2.2 Build Alternative

The existing Airport Boulevard Bridge is a two-lane road approximately 366 feet long and 34 feet wide with thirteen spans over the Whitewater River. This road along with the bridge is classified as a “collector street” by the County of Riverside. The bridge was originally built in 1951 and sustained damage in the 1969 flood. Partial reconstruction of the bridge occurred in 1970, when the bents were retrofitted by placing in-fill walls between the bent columns and pile cap with additional steel piles driven at the two ends of the in-filled wall bents. In 2017 the bridge was rehabilitated to include a 5-foot sidewalk on the south side. Furthermore, this bridge also has scour issues that have exposed a portion of the existing steel-encased piles and is now classified as a “Scour Critical Bridge” as of September 2019 based on Caltrans’ inspection in August 2019.

The bridge is listed in the Federal Eligible Bridge List (EBL) with a Sufficiency Rating (SR) of 60 according to the Bridge Inspection Report prepared by Caltrans Structure Maintenance and Investigations (SM&I). Since the bridge has a SR lower than 80, the bridge is eligible for major rehabilitation in accordance with HBP guidelines.

Additionally, the Federal Emergency Management Agency (FEMA) Flood Plain Report indicated significant inundation for the Airport Boulevard Bridge in a 100 year flood event. The Coachella Valley Water District (CVWD) has proposed improvements of the channel at the bridge location, including lowering of the riverbed by 5 feet and installing concreting lining from bank to bank underneath the existing bridge. The purpose of the CVWD Project is to restore channel flow conditions to convey the 100-year flood, provide requisite freeboard and to remove the existing threat of flooding during a 100-year storm event to the parcels within the area of benefit. The CVWD Project is currently underway, to counter the impact of lowering the channel, four of the bents/support required temporary retrofit, strengthening of these bents/support is also a part of this project.

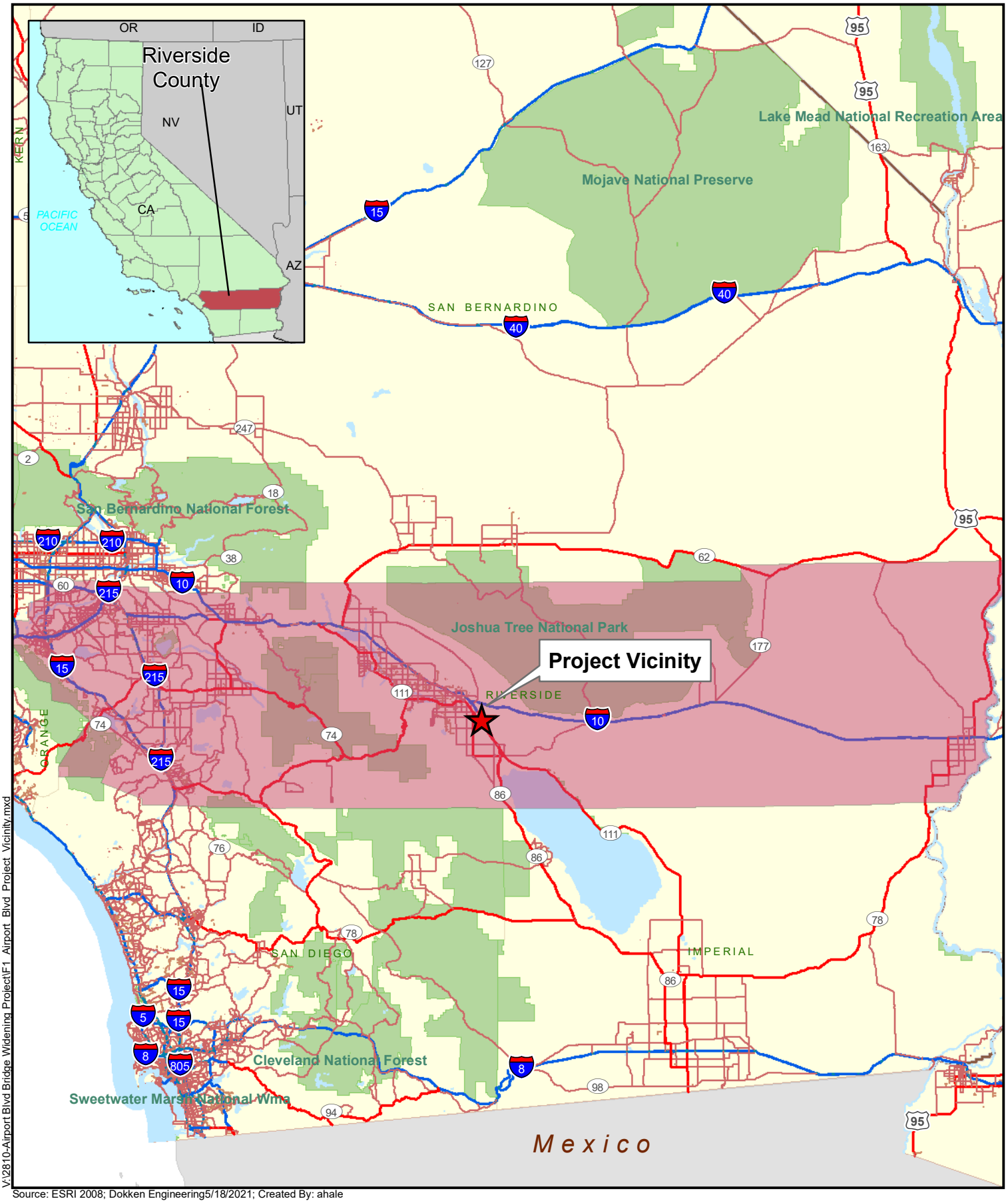
It has been determined that a seismic structural retrofit would cost approximately $1 million dollars more than replacement of the bridge, and with the significant hydraulic constraint cited above, the County proposes to replace Airport Boulevard Bridge with a new concrete structure. This Project proposes to replace the existing 2 lane Airport Boulevard Bridge over Whitewater River with a new, wider, 2 lane bridge and reconstruct the connecting approach roadways to meet current Caltrans seismic design codes. The new bridge would be approximately 375 feet long and would be widened to approximately 71 feet and include 6 foot wide sidewalks on both sides of the bridge, 8 foot wide shoulders, a 14 foot wide eastbound and westbound lane, and a 12 foot wide striped median/turn lane. The new bridge would have foundations placed below the potential scour plane. The Project would raise the bridge profile by approximately 2-3 feet in order to maintain a minimum freeboard from the flood water. The reprofiling would extend into approximately 850 feet of approach roadway to the west that will also be reconstructed.

The Project may also include minor retaining walls and offsite improvements in order to maintain access to the existing mobile home community on the south side of Airport Boulevard. Roadway improvements also include transition pavement to the existing grade separation structure to the west and improvement of the intersection at Orange Street and Airport Boulevard. The Project will also provide sidewalk improvements on the south side of the new bridge as well as accommodate future connectivity to the Coachella Valley Link Trail, which is anticipated to connect to Airport Boulevard along the unnamed local road in the northwestern quadrant of the project.

Depending on the Project design, utility relocation may be required. Coordination with the following utilities to determine actions that may need to be taken once project design is established include: CVWD, Imperial Irrigation, Kinder Morgan Energy Partners, Level 3 Communications/CenturyLink, MCI (Verizon Business), So Cal Gas (Distribution - Palm Desert division), and Utiliquest for Frontier.

The new bridge will be constructed in two stages. Stage 1 is to construct the north half of the bridge along the north edge of the existing structure, while the traffic on Airport Boulevard would remain on the existing bridge in each direction, unless necessary to reduce traffic control to one-way traffic to temporarily accommodate construction vehicles . Once Stage 1 is constructed, two lanes of traffic will be shifted to the newly constructed bridge while the existing bridge is demolished in Stage 2. Upon completion of demolition, the remaining south half of the proposed bridge will be constructed and completed once joined to the north half of the bridge with a closure pour.

Sliver takes for right of way acquisition would be required, and the commercial land in the northeast quadrant adjacent to the Project area would potentially be considered as a staging area.



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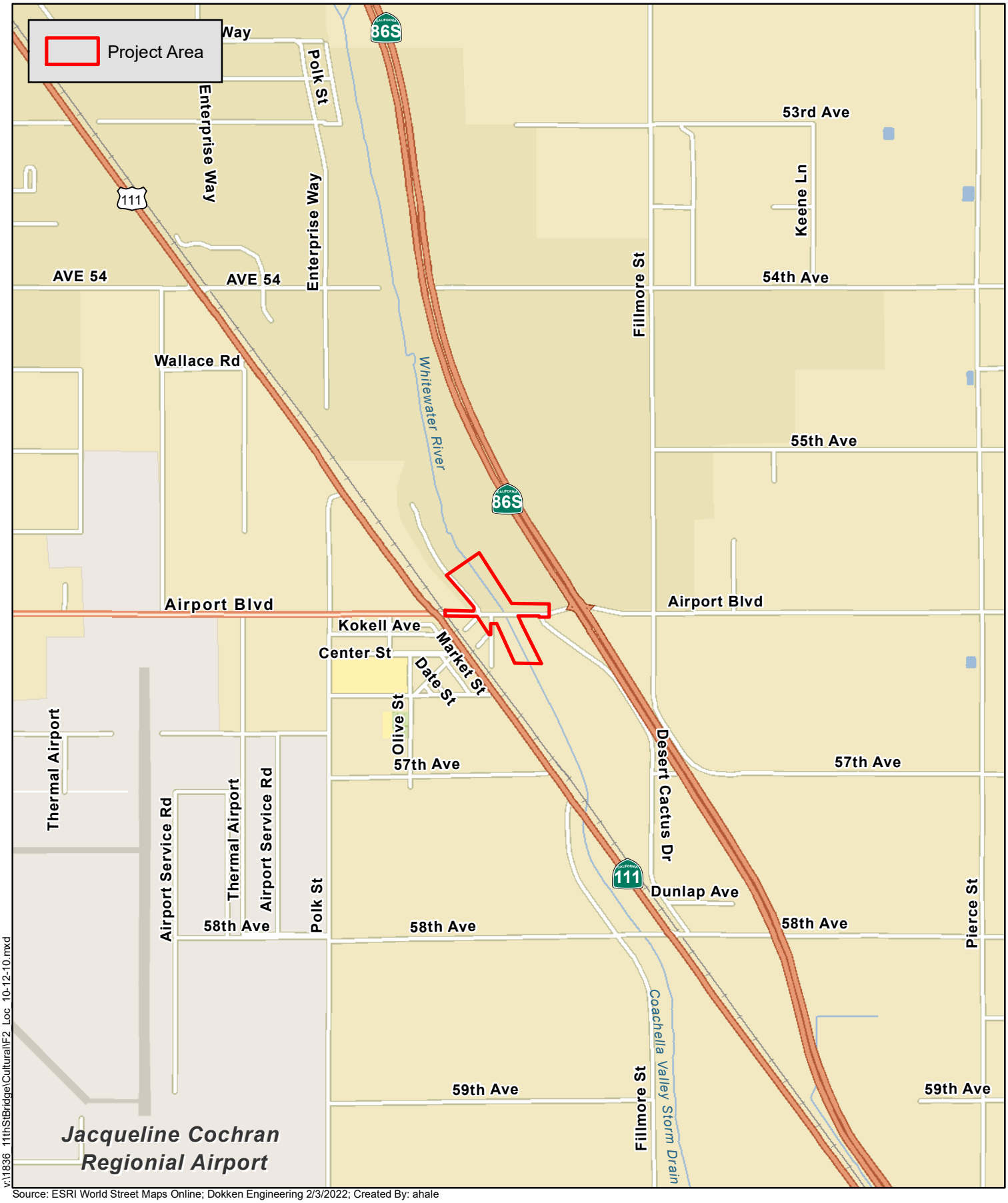
Source: ESRI 2008; Dokken Engineering5/18/2021; Created By: ahale

0 10 20 30 Miles

FIGURE 1
Project Vicinity

BRLS-5956(231)
Airport Boulevard Bridge Replacement Project
Thermal, Riverside County, California



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Source: ESRI World Street Maps Online; Dokken Engineering 2/3/2022; Created By: ahale

0 0.25 0.5 0.75 1 Miles

FIGURE 2
Project Location

BRLS-5956(231)
Airport Boulevard Bridge Replacement Project
Thermal, Riverside County, California

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Source: ESRI Maps Online; Dokken Engineering 10/3/2022; Created By: zachl

1 inch = 250 feet

0 250 500 750 1,000 Feet

FIGURE 3
Project Features

BRLS-5956(231)
Airport Boulevard Bridge Replacement Project
Thermal, Riverside County, California

2. Regulatory Setting

2.1 Federal Laws and Requirements

Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.

- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below).

- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. The Federal Environmental Protection Agency delegated to the California State Water Resources Control Board (SWRCB) the implementation and administration of the NPDES program in California. The SWRCB established nine Regional Water Quality Control Boards (RWQCBs). The SWRCB enacts and enforces the Federal NPDES program and all water quality programs and regulations that cross Regional boundaries. The nine RWQCBs enact, administer and enforce all programs, including NPDES permitting, within their jurisdictional boundaries. Section 402(p) requires permits for discharges of stormwater from industrial, construction, and Municipal Separate Storm Sewer Systems (MS4s).

- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S, including wetlands. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are also two types of Individual permits: Standard Individual permit and Letter of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Individual permits. For Standard Individual permit, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency’s (EPA) Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with

USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have less effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

2.2 State Laws and Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant". Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards as required by the CWA, and regulating discharges to protect beneficial uses of water bodies. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set standards necessary to protect these uses. Consequently, the water quality standards developed for particular water body segments are based on the designated use and vary depending on such use. Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with CWA Section 303(d). If a Regional Board determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls NPDES permits, the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed. The SWRCB implemented the requirements of CWA Section 303(d) through Attachment IV of the Caltrans Statewide MS4, as it includes specific TMDLs for which Caltrans is the named stakeholder.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollutant Discharge Elimination System (NPDES) Program**

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater dischargers, including MS4s. The U.S. EPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying stormwater." The SWRCB has identified the Department as an owner/operator of an MS4 pursuant to federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  Construction General Permit

  Construction General Permit (NPDES No. CAS000002, SWRCB Order No. 2009-0009-DWQ, adopted on November 16, 2010) became effective on February 14, 2011 and was amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. The permit regulates stormwater discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development.

  For all projects subject to the CGP, the applicant is required to hire a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD) to develop and implement an effective SWPPP. All Project Registration Documents, including the SWPPP, are required to be uploaded into the SWRCB's on-line Stormwater Multiple Application and Report Tracking System (SMARTS), at least 30 days prior to construction.

  The proposed Project is subject to the CGP.

  Waivers from CGP coverage.

  Projects that disturb over 1.0 acre but less than 5 acres of soil, may qualify for waiver of CGP coverage. This occurs whenever the R factor of the **Watershed Erosion Estimate**

(=RxKxLS) in tons/acre is less than 5. Within this CGP formula, there is a factor related to when and where the construction will take place. This factor, the 'R' factor, may be low, medium or high. When the R factor is below the numeric value of 5, projects can be waived from coverage under the CGP, and are instead covered by the Caltrans Statewide MS4.

In accordance with SWMP, a Water Pollution Control Plan (WPCP) is necessary for construction of a Caltrans project not covered by the CGP.

Construction activity that results in soil disturbances of less than one acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop a SWPPP, to implement soil erosion and pollution prevention control measures, and to obtain coverage under the CGP.

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels are determined during the planning, design, and construction phases, and are based on project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows.

The proposed Project does not quality for waiver of CGP coverage.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit, issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may prescribe a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act). WDRs may specify the inclusion of additional project features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.3 Regional and Local Requirements

The general objective for all waters of the Colorado River Basin RWQCB is as follows:

The antidegradation directives of §13000 of the Water Code and State Water Board Resolution No. 68-16 ("Statement of Policy With Respect to Maintaining High Quality Waters in California") require that high quality waters of the State shall be maintained "consistent with the maximum benefit to the people of the State." The RWQCB applies these directives when issuing a permit, or in an equivalent process, regarding any discharge of waste which may affect the quality of surface or ground waters in the region.

Implementation of this policy to prevent or minimize surface and ground water degradation is a high priority for the RWQCB. In nearly all cases, preventing pollution before it happens is much more cost-effective than cleaning up pollution after it has occurred. Once degraded, surface water is often difficult to clean up when it has passed downstream. Likewise, cleanup of ground water is costly and lengthy due, in part, to its relatively low assimilative capacity and inaccessibility. The prevention of degradation is, therefore, an important strategy to meet the policy's objectives.

The RWQCB will apply Resolution No. 68-16 in considering whether to allow a certain degree of degradation to occur or remain. In conducting this type of analysis, the RWQCB will evaluate the nature of any proposed discharge, existing discharge, or material change therein, that could affect the quality of waters within the region. Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

Pursuant to this policy, a Report of Waste Discharge, or any other similar technical report required by the Board pursuant to Water Code §13267, must include information regarding the nature and extent of the discharge and the potential for the discharge to affect surface or ground water quality in the region. This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives. The extent of information necessary will depend on the specific conditions of the discharge. For example, use of best professional judgment and limited available information may be sufficient to determine that ground or surface water will not be degraded. In addition, the discharger must identify treatment or control measures to be taken to minimize or prevent water quality degradation.

Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) Basin Plan

The Water Quality Control Plan for the Colorado River Basin (Region 7) consists of the water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for the Regional Board's regulatory programs. The Basin Plan establishes water quality standards for the ground and surface waters of the region. The term "water quality standards," as used in the federal Clean Water Act, includes both the beneficial uses of specific waterbodies and the levels of quality which must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the Regional Board and others that are necessary to achieve and maintain the water quality standards.

The Regional Board regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means.

Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For waterbodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included.

In some cases, it has been necessary for the Regional Board to completely prohibit the discharge of certain materials. Some types of discharges are prohibited in specific areas. Details on these prohibitions also appear in the Basin Plan.

Whitewater River Region Stormwater Management Plan

The Whitewater River Region Stormwater Management Plan (SWMP) describes those activities and programs implemented by the Permittees to manage Urban Runoff to comply with the requirements of the NPDES municipal separate storm sewer system MS4 permit for the Whitewater River Region. Led by the Riverside County Flood Control and Water Conservation District and Riverside County, the SWMP was developed in collaboration with the Cities of Banning, Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, Rancho Mirage, as well as the Coachella Valley Water District. The primary purpose of the SWMP is to provide watershed-based planning throughout the Whitewater River Region SWMP planning area.

Coachella Valley Multiple Species Habitat Conservation Plan

The County of Riverside is a participant of the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). The Project is located within the regulatory boundary of the CVMSHCP but is completely outside the limits of any designated conservation areas, including the Conservation Area of the CVMSHCP. The CVMSHCP was created to enhance and maintain biological diversity and ecosystem processes while allowing future economic growth. The CVMSHCP provides comprehensive compliance with Federal and State endangered species laws and standardizes 27 Covered Species mitigation/compensation measures for a streamlined regulatory process (CVAG). To mitigate take of Covered Species, the CVMSHCP protects and manages desired habitats within designated Conservation Areas.

Riverside County General Plan

The County's General Plan contains the County's goals and desires concerning land use and is designed to serve as the basis for development decisions. The following policies from the County's General Plan, Land Use Element are applicable to the Project (Riverside County 2020):

- LU 9.1, Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values.

- LU 9.2, Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and federal an state regulations such as CEQA, NEPA, the Clean Air Act, and the Clean Water Act.

- LU 9.4, Allow development clustering and/or density transfers in order to preserve open space, natural resources, cultural resources, and biologically-sensitive resources. Whenever possible, development on parcels containing 100-year floodplains, blueline streams and other higher -order watercourses, and areas of steep slopes adjacent to them

shall be clustered to keep development out of watercourse and adjacent steep slope areas, and to be compatible with other nearby land uses.

2.4 Regulatory Permits Required

Regulatory permits are required prior to impacts to jurisdictional waters of the U.S or State. The following regulatory permits were determined to be necessary for Project activities and would be obtained by the Project:

- CDFW §1602 Streambed Alteration Agreement: for Project impacts to riparian habitats and CDFW jurisdictional floodplain areas.

- RWQCB CWA §401 Water Quality Certification: for the discharge of dredged or fill material into waters of the U.S. and State.

- USACE §404 Nationwide Permit 14: for the discharge of dredged or fill material into waters of the U.S.

3. Affected Environment

This affected environment section describes the environmental characteristics within the proposed Project area. Population, land use, topography, hydrology including regionally and locally, groundwater hydrology, geology/soils, biological communities, water quality standards, and beneficial uses are discussed.

3.1 General Environmental Setting

The Project is located in Thermal, an unincorporated community within the Coachella Valley in Riverside County. The Project is approximately 0.2 miles west of State Route 86. Population within the County is concentrated in cities such as Corona, Moreno Valley, and Riverside. The topographic features in the Project vicinity mainly consist of flat, low elevation land that is located in the Southern California's Colorado Desert. The Project area contains one existing water feature, Whitewater River.

3.1.1 Population and Land Use

Riverside County has a total population of 2,418,185 (U.S. Census 2020). The Thermal area has a population of 1,333 (U.S. Census 2019). The area surrounding the Project has a land use designation of Medium Density Residential, Medium High Density Residential, High Density Residential, Rural Residential, Light Industrial and Commercial Retail (Riverside County General Plan, 2020).

3.1.2 Topography

The Project site is within the *Indio* United States Geological Survey (USGS) 7.5-minute quadrangle. The elevation within the Project site is approximately 130 feet above mean sea level (Figure 4. Topographic Map).

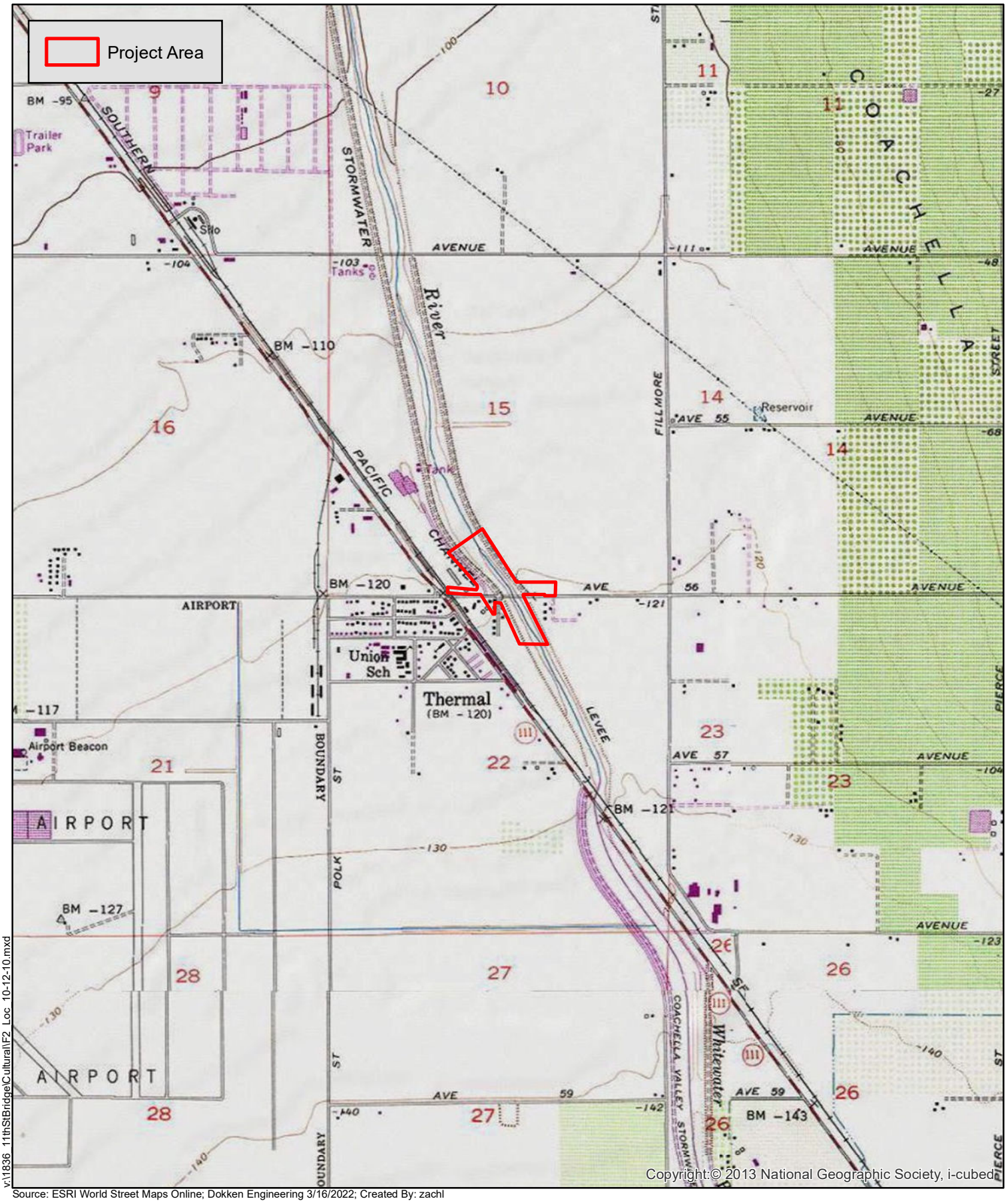
3.1.3 Hydrology

3.1.3.1 *Regional Hydrology*

The Colorado River Basin Region covers approximately 13 million acres in the southeastern portion of California. Regional drainage waters resulting from Colorado River diversions and use, and which do not return to the Colorado River, drain into the Salton Sea. That portion of the Region that does not drain into the Colorado River is referred to as the Colorado River Basin (West) or West Basin.

Much of the northern portion of the West Basin drains to several individual internal sinks or playas, while the southern portion generally drains to the Salton Sea. The Imperial and Coachella Valleys contain numerous drains that transport irrigation return flows and stormwater, as well as canals for importation and distribution of Colorado River water.

The Salton Sea, which is replenished principally by irrigation drainage and stormwater, is the largest body of water in the West Basin. The Salton Sea serves as a reservoir to receive and store agricultural drainage and seepage waters, but also provides important wildlife habitat and is used for recreational purposes which include boating and fishing. Several smaller constructed recreational lakes are located in the Imperial Valley. In addition, Lake Cahuilla in Coachella Valley is used to store Colorado River water for irrigation and recreational purposes.



Source: ESRI World Street Maps Online; Dokken Engineering 3/16/2022; Created By: zachl

v:\1836_11thStBridge\Cultural\F2_Loc_10-12-10.mxd

0 0.25 0.5 0.75 1 Miles

FIGURE 4
Topographic Map
BRLS-5956(231)
Airport Boulevard Bridge Replacement Project
Thermal, Riverside County, California

3.1.3.2 *Local Hydrology*

The Project vicinity consists of the Coachella Valley bordered by the San Jacinto and Santa Rosa Mountains to the west, Indio Hills and the San Bernardino Mountains to the north, and Mecca Hills to the northeast. (Figure 4. Topographic Map). The Salton Sea is located approximately 10 miles southeast of the southernmost portion of the Project area. The southern portion of the Whitewater River is located within the Project area and has direct downstream connectivity with the Salton Sea.

3.1.3.2.1 Precipitation and Climate

The local climate of the Sonoran Desert subregion of the southwestern California Region is characterized by warm, dry summers, cold winters, and infrequent rainfall. The average annual high temperature is 90 degrees Fahrenheit (°F) and the average annual low temperature is 57 °F (U.S. Climate Data 2020). The region receives an average of 3.15 inches of precipitation annually in the form of rain. Elevations within the Project area range from approximately 200 to 50 feet below mean sea level.

3.1.3.2.2 Surface Waters

The Whitewater River is the primary drainage course in the area, spanning the length of the Coachella Valley. There is a perennial slow in the mountains, but because of diversions and percolation into the basin, the River becomes dry further downstream. The Whitewater River serves as a drainage way for irrigation return flows, treated community wastewater, and storm runoff (Colorado River Basin Plan). Whitewater River originates approximately 20 miles northeast of the Project, at a slightly higher elevation in the foothills to the east. The Whitewater River runs for approximately 10 miles from the Project area into the Salton Sea.

3.1.3.2.3 Floodplains

The FEMA Flood Insurance Rate Map (FIRM) designates the Project area as Zone AE. Zone X indicates a high-risk area, also known as the special flood hazard area (Appendix A. FEMA FIRMette Map). A FIRMette map displays FEMA Flood Zone classifications and flood extents for the proposed Project area.

3.1.3.2.4 Municipal Supply

Drinking water in the Coachella Valley is pumped from the underlying aquifer approximately 1,200 feet below the ground surface. Surface runoff and subsurface inflow are significant sources of recharge to the subbasin. In addition, the Whitewater River spreading grounds northwest of Palm Springs receives Colorado River Aqueduct water and has a maximum capacity of 300,000 acre-foot per year. Colorado River water is conveyed into the subbasin via the Coachella Canal, which also supplies a pilot recharge Project facility located in the southeastern part of the subbasin.

3.1.3.3 *Groundwater Hydrology*

The Project is located in the Coachella Valley-Indio Sub-basin, within the Colorado River Basin (DWR 2019). Within the Coachella Valley Planning Area, groundwater is generally unconfined except in the lower areas of the Coachella Valley. A clay aquitard, which is a result of past sedimentation in the old lake bed, extends from the Salton Sea to some distance west of Indio, overlying the domestic-use aquifers. The clay layer underlies lenses of permeable sediments and

perched groundwaters the are replenished by percolating irrigation water (California RWQCB 2006).

3.1.4 Geology/Soils

3.1.4.1 *Soil Erosion Potential*

Soil within the Project area consists of Fluvents (47.1%), Gilman fine sandy loam, wet, 0 to 2 percent slopes (52.5%), and Indio very fine sandy loam, wet (0.5%) (Appendix B. NRCS Soil Resource Report). The erodibility factor (K-factor) for this area is 0.37, indicating they are moderately susceptible to particle detachment and they produce runoff at moderate rates (Caltrans Water Quality Planning Tool).

3.1.5 Biological Communities

3.1.5.1 *Aquatic Habitat*

Based on field survey results, and the *Indio* USGS 7.5-minute quadrangle topographic map, the water feature within the Project area is Whitewater River. Approximately 2,000 linear feet length of Whitewater River occurs within the Project area.

3.1.5.1.1 Special Status Species

Database searches concluded that there were 14 plant species and 36 wildlife species with the potential to occur in the Project vicinity. Based on habitat assessments conducted for the Project's Natural Environment Study (NES) (2022), no special status species in the region have the potential of occurring within the Project's Biological Study Area (BSA). Measures to minimize or avoid impacts to special status species are noted in the NES.

3.1.5.1.2 Stream/Riparian Habitats

The Whitewater River runs through the BSA and is a tributary to the Salton Sea in the south extent of Riverside County and into Imperial County. The CVWD Project, a major improvement project to concrete line the entirety of the channel for scour protection, is currently modifying the Whitewater River in the Project area. The existing perennial low-flow stream fed by discharges from municipal wastewater reclamation plants and rising groundwater from subsurface drainage facilities primarily serving agricultural lands will continue to flow in a pilot channel. In the channel, the extent of a vegetated soft channel bottom will be reduced but will not be entirely eliminated, as periodic stormflows and associated debris transport will result in coverage of portions of the subject bottom lining that may support limited vegetation until maintained. The CVWD Project will temporarily disrupt or remove vegetation within a short reach of the channel. Once construction is completed the centerline of the pilot channel will be reestablished and the soft bottom portions of the channel will naturally re-vegetate as they do today following channel maintenance activities.

3.1.5.1.3 Wetlands

No wetlands were determined to be within the Project area as the entirety of the Whitewater River will be concreted lined. No impacts to wetlands are anticipated.

3.1.5.1.4 Fish Passage

Database research indicated that the Whitewater River within the BSA does not contain Essential Fish Habitat (EFH). Additionally, the Project area does not contain Critical Habitat for any fish species. No fish are anticipated to occur in the channel.

3.2 Water Quality Objective/Standards and Beneficial Uses

3.2.1 Surface Water Quality Objectives/Standards and Beneficial Uses

Per the Water Quality Control Plan, Colorado River Basin (7) (2019), surface waters of the region shall not contain, as a result of controllable water quality factors, taste- or odor-producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish or other regional inland surface water resources used for human consumption shall not be impaired.

The Colorado River Basin Regional Water Quality Control Board assigns beneficial uses for tributary streams based on the uses assigned to the named waterbody that the tributary connects with. Table 1, below, defines these beneficial uses for surface waters. Water quality objectives are presented in Table 2, below.

Table 1. Colorado River Basin RWQCB Beneficial Uses of Water
MUN (Municipal and Domestic Supply) = Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
AGR (agricultural supply) = uses of water for farming, horticulture, or ranching including, nut not limited to, irrigation, stock watering, or support of vegetation for range grazing.
AQUA (aquaculture) = Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
IND (industrial service supply) = Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
GWR (ground water recharge) = Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting salt water intrusion into fresh water aquifers.
RARE (preservation of rare and endangered species) = Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.
REC-1 (water contact recreation) = Uses of water for recreational activities involving body contact with water, where ingestion is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
REC-2 (non-contact water recreation) = Uses of water for recreational activities involving proximity to water but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beach combing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Table 1. Colorado River Basin RWQCB Beneficial Uses of Water
WARM (warm freshwater habitat) = Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.
COLD (cold freshwater habitats) = Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
WILD (wildlife habitat) = Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife, or wildlife water and food sources.
POW (hydropower generation) = uses of water for hydropower generation.
FRSH (freshwater replenishment) = Uses of water for natural or artificial maintenance of surface water quantity or quality.
Source: Colorado River Basin Region Water Quality Control Board 2019

Table 2. Water Quality Objectives for Surface Waters	
Constituent	**Water Quality Objective**
Aesthetic Qualities	All waters shall be free from substances attributable to wastewater of domestic or industrial origin or other discharges which adversely affect beneficial uses not limited to: Settling to form objectionable deposits; floating as debris, scum, grease, oil, wax, or other matter that may cause nuisances; and producing objectionable color, odor, taste, or turbidity.
Biosimulatory Substances	Water shall not contain biosimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. Nitrate and phosphate limitations will be placed on industrial discharges to New and Alamo Rivers and irrigation basins on a case-by- case basis, taking into consideration the beneficial uses of these streams.
Pesticides Wastes	The discharge of pesticidal wastes from pesticide manufacturing processing or cleaning operations to any surface water is prohibited.
pH	pH shall range from 6.0-9.0. Discharges shall not cause any changes in pH detrimental to beneficial water uses.
Radioactivity	Radiouniclides shall not be present in waters in concentrations which are deleterious to human, plant, animal or aquatic life or that result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal or aquatic life.
Sediment	The suspended sediment load and suspended sediment discharge rate to surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Suspended Soils	Discharges of wastes or wastewater shall not contain suspended or settlable solids in concentrations which increase the turbidity of

Table 2. Water Quality Objectives for Surface Waters

Constituent	Water Quality Objective
	receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in turbidity does not adversely affect beneficial uses.
Tainting Substances	Water shall be free of unnatural materials which individually or in combination produce undesirable flavors in the edible portions of aquatic organisms.
TDS	Discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such an increase in total dissolved solids does not adversely affect beneficial uses of receiving waters.
Temperatures	The natural receiving water temperature of surface waters shall not be altered by discharges of wastewater unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.
Toxicity	All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or indigenous aquatic life.
Dissolved Oxygen	The dissolved oxygen concentration shall not be reduced below the following minimum levels at any time: Waters designated: WARM .....5.0 mg/l COLD..... 8.0 mg/l WARM and COLD..... 8.0 mg/l
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.
Chemical Constituents	No individual chemical or combination of chemicals shall be present in concentrations that adversely affect beneficial uses.

Source: Water Quality Control Plan for the Colorado River Basin Region (2019)

3.2.2 Groundwater Quality Objectives/Standards and Beneficial Uses

Per the Water Quality Control Plan, Colorado River Basin Region (7) (2019), quality objectives for the region are: to maintain the existing water quality of all nongraded ground water basins, minimize the quantities of contaminants reaching any ground water basin, and maintain the existing water quality where feasible. Beneficial uses include for Municipal and Domestic Supply, Industrial Service Supply, and Agricultural Supply.

3.3 Existing Water Quality

In general, the water quality in the Salton Sea Watershed has been identified as a Category I (impaired) Watershed under the 1997 California Unified Watershed Assessment (UWA) (CRRWQCB 2020). Water quality is altered by a number of factors including consumptive use,

importation of water high in dissolved solids, run-off from urban and agricultural areas, and the recycling of water within the basin.

3.3.1 List of Impaired Waters

Coachella Valley Storm Water Channel, also known as the Whitewater River, is a 303(d) listed waterway (Caltrans Water Quality Planning Tool, 2021). Table 3 provides a list of impairments.

Table 3. 303(d) Listed Impairments

Name of Waterbody	Pollutant	Size	Status
Coachella Valley Storm Water Channel (Whitewater River)	DDT (Dichlorodiphenyltrichloroethane)	24.75 miles	TMDL required
	Dieldrin		TMDL required
	Indicator Bacteria		Being addressed with the USEPA approved TMDL
	Nitrogen, ammonia (total Ammonia)		TMDL required
	PCB's (polychlorinated biphenyls)		TMDL required
	Toxaphene		TMDL required
	Toxicity		TMDL required

Source: Source: Caltrans Water Quality Planning Tool, 2021. http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx

4. Environmental Consequences

4.1 Introduction

On June 20, 2013, the Colorado River Basin Regional Water Quality Control Board issued a third-term area wide NPDES MS4 Permit (Order No. R7-2013-0011) to the Riverside County Flood Control and Water Conservation District (the Principal Permittees), the County of Riverside in cooperation with the CVWD and incorporated Cities of Banning, Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs and Rancho Mirage (Co-Permittees). The Principal Permittees and the Co-Permittees compromise the Permittees. The Permittees' stormwater programs are designed to ensure compliance with this permit.

The Project proposes to replace the existing 2 lane Airport Boulevard Bridge over Whitewater River with a new, wider, 2 lane bridge and reconstruct the connecting approach roadways to meet current Caltrans seismic design codes. The Project will result in an approximate 0.34 acre increase of new impervious surface, which will increase the volume of storm water runoff from the roadways surface. The proposed Project will adhere to water quality standards maintained by the SWRCB for the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. A CGP would be obtained prior to construction. Potential impacts would be mitigated for sediment, erosion, and non-storm water control methods pursuant to the requirements of the NPDES CGP.

The Project will be designed with BMPs that the RWQCB has deemed as effective at reducing erosion, controlling sediment, and managing runoff. These can include: covering disturbed areas with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, and permanent seeding. Sediment control BMPs include installing silt fences or placing straw wattles below slopes, installing berms and other temporary run-on and runoff diversions.

The Project will implement standard BMPs to avoid and minimize water quality impacts; however, they are not to preclude new or innovative approaches currently available or being developed. The CGP, including the monitoring log, must be kept on-site during construction activities and will be made available upon request to representatives of the RWQCB.

4.2 Potential Impacts to Water Quality

Proposed Project activities, such as replacing the existing 2 lane bridge with a with a new, wider 2 lane bridge, would create new impervious surfaces. This would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional sediment runoff during storm events which could degrade the quality of receiving waters. During storm events, sediment is transported via runoff to stormwater drainage systems. Absent controls, contaminated runoff waters could flow into the stormwater drainage systems that discharge into rivers, agricultural ditches, sloughs, and channels and ultimately could degrade the water quality of any of these water bodies.

The Project would result in an increase of approximately 0.34 acre of paved surface area, which would contribute to an increase in the volume of storm water runoff from the bridge surface that could enter the drainage system and eventually the waterways within the Project area. The Project's compliance with County and State water quality and stormwater best management

practices will ensure the Project avoids and/or minimizes potential water quality impacts to the greatest extent practicable, such as measures WQ-1 through WQ-4 (see Section 5: Avoidance and Minimization Measures).

There is potential for an increase in drainage discharge into the Coachella Valley Storm Water Channel, which is 303(d) listed for pesticides and heavy metals, due to increased impervious surfaces from the bridge replacement. Measures WQ-1 through WQ-4 would be implemented to minimize potential impacts to a 303(d) listed waterway.

4.2.1 Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment

4.2.1.1 *Substrate*

Substrate refers to the structure and composition of a riverbed. Once construction of the CVWD Project is complete, the low flow channel of the Whitewater River may contain natural substrate that could be affected by the proposed Project. In-channel work can disturb bottom substrate in the Whitewater River, which could remobilize sediments as well as contaminants adsorbed to the sediments. Non-soluble contaminants with a tendency to adsorb to sediments (as opposed to soluble contaminants, which have the tendency to be readily diluted in water) can settle and accumulate in the substrate over time. The resuspension of contaminants found in bottom substrate can remobilize these contaminants and release them into the water column and can degrade water quality. In addition, resuspended particulate material could be transported to other locations in the Whitewater River as a result of flow patterns and currents, thus leading to potential degradation of water quality beyond the study area.

The Project will include all feasible standard construction BMPs. Measures WQ-1, WQ-2 and WQ-4 address this. Compliance with the CGP would ensure the Project does not result in significant impacts to water quality due to construction-related activities. Impacts related to substrates disturbed by in-water work would be reduced to a less than significant level.

4.2.1.2 *Currents, Circulation or Drainage Patterns*

The proposed Project would modify existing drainage patterns due to the proposed bridge widening. No regional drainage facilities are anticipated to be impacted and no significant new drainage facilities are expected to be constructed. Impacts would be less than significant.

The CVWD Project will modify current drainage patterns in the Project vicinity. The CVWD Project involves improvements to existing channel facilities and is required to: 1) restore channel flow conditions to convey the 100-year flood and provide requisite freeboard, and 2) remove the existing threat of flooding during a 100-year storm event to the parcels within the area of benefit. The proposed CVWD Project includes continuous channel side slope concrete-lining form Avenue 54 downstream a point approximately 300 feet downstream of the existing Thermal Drop Structure. CVWD Project improvements will also include channel bottom concrete-lining under and in proximity to the four bridges that cross the subject reach of the channel. According to the Environmental Impact Report prepared, the CVWD Project will have a less than significant impact on drainage patterns.

4.2.1.3 *Suspended Particulates (Turbidity)*

Turbidity refers to cloudiness of water quantified by the degree to which light traveling through a water column is scattered by the suspended organic and inorganic particles it contains. Turbidity in water bodies block light transmission and light penetration, increasing bacteria levels and reducing oxygen levels in the water. Sedimentation can result in increased turbidity. Measures WQ-1, WQ-2 and WQ-4 would address this. Compliance with the CGP would ensure the Project does not result in significant impacts to water quality due to construction-related activities. As a result, the Project is not anticipated to produce long-term effects on turbidity.

4.2.1.4 *Oil, Grease and Chemical Pollutants*

The Project would result in an increase to paved surface areas of approximately 0.34 acres, which would increase the volume of storm water runoff from the roadways surface that could enter the drainage system and eventually the river itself. Roadways may contain oil, grease, petroleum products, zinc, copper, lead, cadmium, iron, or other trace metals, which could harm aquatic life. Concentrations of these pollutants in storm water runoff would be greatest during the "first flush" storm event, generally the first major rains of the season. Implementation of measure WQ-1, WQ-2 and WQ-4 would minimize potentially increased pollutant runoff caused by the increase in impervious surfaces to help prevent water quality impacts to the Whitewater River. Impacts related to surface runoff that would result in substantial additional sources of runoff would be less than significant with mitigation incorporated.

4.2.1.5 *Temperature, Oxygen, Depletion and Other Parameters*

Construction activities for the proposed Project could adversely affect temperature, oxygen, and other parameters. In compliance with the CGP, the Project will implement Construction BMPs during construction activities. Construction BMPs would include, but not be limited to, Good Housekeeping BMPs to prevent spills, leaks, and discharges of construction debris and waste into receiving waters. In addition, sanitary waste generated from temporary or portable sanitary facilities would be disposed of in compliance with the applicable regulations. Also, while there is a potential for an increase in litter due to human use, litter use would not be exacerbated because of this Project. There is a low potential for the proposed Project to contribute to adverse water quality effects related to temperature, oxygen depletion, and other parameters.

4.2.1.6 *Flood Control Functions*

As previously described in Section 3.1.3.2.3, Floodplains the existing bridge is located in an area of a special flood hazard Area (Zone AE). The Project proposes to raise the bridge profile by approximately 2-3 feet in order to maintain a minimum freeboard from the flood water.

4.2.1.7 *Storm, Wave and Erosion Buffers*

Wetlands serve as buffer zones that shield upland areas from wave actions, storm damage, and erosion. The Project is not anticipated to have impacts to seasonal wetlands. There will be no adverse impacts to storm, wave, and erosion buffers.

4.2.1.8 *Erosion and Accretion Patterns*

Operation of the Airport Boulevard Bridge under the proposed build alternative would not measurably affect sediment loading to the receiving water bodies. Only intermittent and

seasonal resuspensions of sediment (through stormwater flows) may be anticipated. The proposed Project would not change the existing drainage patterns. Erosion or accretion patterns are not expected to increase.

4.2.1.9 *Aquifer Recharge/Groundwater*

Groundwater may be encountered during construction, and groundwater dewatering may be required during construction activities within the streambed. However, any groundwater dewatering activities during construction would be temporary, and the volume removed would be minimal. Therefore, there is a low potential for the proposed Project to adversely affect groundwater recharge.

4.2.1.10 *Baseflow*

Baseflow is the streamflow resulting from precipitation that infiltrates the soil and eventually moves through the soil to the stream channel. The Project would result in increases in impervious surface area; however, the added impervious areas as a result of the new bridge would be slight when considering the entire watershed area. The proposed Project would not substantially decrease infiltration and would not affect baseflow as the Project would result in a minimal increase in impervious area and the soils in the area have a high capacity for infiltration.

4.2.2 Anticipated Changes to the Biological Characteristics of the Aquatic Environment

4.2.2.1 *Special Aquatic Sites*

Special aquatic sites include wetlands, sanctuaries, refuges, mudflats, vegetated shallows, coral reefs and riffle and pool complexes. No wetlands were determined to be within the Project are as the entirety of the Whitewater River will be concreted lined. No impacts to special aquatic sites are anticipated.

4.2.2.2 *Habitat for Fish and Other Aquatic Organisms*

Database research indicated that the Whitewater River within the BSA does not EFH. Additionally, the Project area does not contain Critical Habitat for any fish species. No fish are anticipated to occur in the channel and no impacts are anticipated.

4.2.2.3 *Wildlife Habitat*

Implementation of the Project is anticipated to affect some wildlife habitat within the BSA. This habitat is potentially suitable for burrowing owls; however, no burrowing owls were identified within the Project area. Avoidance and minimization measures listed in the NES will reduce impacts to these species to the extent feasible.

4.2.2.4 *Endangered or Threatened Species*

The proposed Project is not anticipated to impact any endangered or threatened species. With the incorporation of avoidance and minimization measures listed in the NES, direct impacts to any endangered or threatened species within the BSA are not anticipated.

4.2.2.5 *Invasive Species*

Project construction activity has the potential to introduce invasive, exotic, and non-native vegetation, some of which may not now exist in the area. This can provide a pathway for dispersal of invasive plants. The NES will provide avoidance and minimization measures to implement to prevent the spread of invasive species, including measures to ensure regular cleaning of earthmoving, seeding, and any other equipment used on-site.

4.2.3 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

4.2.3.1 *Existing and Potential Water Supplies; Water Conservation*

The Project will replace an existing bridge with a new wider 2 lane bridge. The Project would not require irrigation and there are no other demands for harvested water that exist on the Project site. Existing and potential water supplies and water conservation will not be negatively impacted as a result of the Project.

4.2.3.2 *Recreational or Commercial Fisheries*

Recreational/commercial fisheries are not uses of the aquatic features in the Project area, therefore, there will be no changes as a result of the Project.

4.2.3.3 *Other Water Related Recreation*

Given the existing conditions of the waterway present and the CVWD Project currently underway, the aquatic environment in the Project area is already impacted by human development. Further impacts to water related recreation is not expected as a result of the Project.

4.2.3.4 *Aesthetics of the Aquatic Ecosystem*

Given the avoidance and minimization measures that will be implemented during construction of this Project, the existing conditions of the waterway present, and the CVWD Project currently underway, aesthetics of the aquatic environment will not be negatively impacted as a result of the Project.

4.2.3.5 *Parks, National and Historic Monuments, National Seashores, Wild and Scenic Rivers, Wilderness Areas, etc.*

There are no parks, national and historic monuments, national seashores, wild and scenic rivers, and wilderness areas within the Project area. There will be no changes as a result of the Project.

4.2.3.6 *Traffic/Transportation*

The Project will replace the existing bridge with a wider 2 lane bridge. Transportation/traffic will not be negatively impacted.

4.2.3.7 *Energy Consumption of Generation*

The waters in the Project area are not used for energy generation. Therefore, there is no potential for the proposed Project to have an adverse effect on energy consumption or energy generation.

4.2.3.8 *Navigation*

Navigation is not listed as a beneficial use, per the CRBRWQCB. The Project will not impact navigation.

4.2.3.9 *Safety*

The Project is expected to have a positive impact on safety since the new bridge will meet current seismic, service load standards, and provide an adequate facility for emergency response and general access across the Whitewater River.

4.2.4 Temporary Impacts to Water Quality

4.2.4.1 *No Build Alternative*

The No Build Alternative would continue to use the existing Airport Boulevard Bridge and there will be no temporary impacts to water quality.

4.2.4.2 *Build Alternative*

Construction activities associated with the Project would include disturbances to the ground surface from earthwork, grading, excavation for foundation installation, and rock slope protection to prevent erosion.

Temporary Physical/Chemical Changes
These temporary activities could potentially increase the amount of sediment entering Whitewater River. Runoff during the winter season is of greater concern due to the potential erosion of unprotected or graded surfaces during rain events resulting in physical and chemical impacts to the waterway.

Temporary Biological Changes
Sediment could potentially harm aquatic resources and water quality. Oil and other petroleum products used to maintain and operate construction equipment could be accidentally released and the increase in noise, dust, and trash could impact the quality of aquatic habitat within the Project area during construction resulting in temporary biological impacts.

Temporary Human Use Changes
While human use of the Whitewater River at this location is not anticipated, the increased noise, dust, and trash during construction could temporarily impact the human use characteristics.

Temporary Impact to Water Quality
Potential temporary impacts would be avoided and minimized through standard BMPs that avoid or minimize the release of pollutants, including chemical toxins, into the environment during construction. Construction areas would be protected to prevent items from entering the waterway.

4.2.5 Long-term Impacts During Operation and Maintenance

4.2.5.1 *No Build Alternative*

The No Build Alternative would continue to use the existing Airport Boulevard Bridge and there will be no long-term impacts to water quality.

4.2.5.2 *Build Alternative*

Long-Term Physical/Chemical Changes
As discussed in Section 4.2.1 above, the project is incorporating measures to avoid and minimize all potential water quality impacts through the implementation of design features and best management practices. No long-term physical/chemical changes to aquatic environment are anticipated.

Long-Term Biological Changes
As discussed in Section 4.2.2 above, no sensitive biological resources are anticipated to be impacted and no long-term biological changes to the aquatic environment are anticipated.

Long-Term Human Use Changes
As discussed in Section 4.2.3 above, there is minimal human use of the Whitewater River and no long-term human use changes to the aquatic environment are anticipated.

Long-Term Impacts to Water Quality
Through the development and implementation of BMPs and avoidance and minimization measures, the proposed Project is not anticipated to result in long term effects to the physical/chemical, biological, and human use characteristics of the aquatic environment.

4.3 Impact Assessment Methodology

The proposed Project anticipates the same pollutants of concern that currently exist to occur during construction and post-construction operation and maintenance. If there are no minimization measures, the Project pollutants of concern could lead to water quality degradation that could impact recreation and human use. To minimize water quality degradation, BMPs should be incorporated, as required by Riverside County as well as the NPDES Permit for Construction.

4.4 Cumulative Impacts

The Project would add a net impervious surface area of approximately 0.34 acres but would include site design BMPs to minimize potentially increased pollutant runoff caused by the increase in impervious surfaces to help prevent water quality impacts. Implementation of avoidance and minimization measures would minimize potentially increased pollutant runoff caused by the increase in impervious surfaces to help prevent water quality impacts.

5. Avoidance and Minimization Measures

WQ-1: The proposed Project would require a NPDES GCP for Discharges of storm water associated with construction activities (Construction General Permit 2012-0006-DWQ). The construction contractor shall adhere to the SWRCB Order No. 2012-0006-DWQ NPDES Permit pursuant to Section 402 of the CWA. This permit authorizes storm water and authorized non-storm water discharges from construction activities. As part of this Permit requirement, a SWPPP shall be prepared prior to construction consistent with the requirements of the RWQCB. This SWPPP will incorporate all applicable BMPs to ensure that adequate measures are taken during construction to minimize impacts to water quality.

WQ-2: To conform with water quality requirements in the CGP, the following will be implemented during construction:

- Vehicle maintenance, staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants must be a minimum of 50 feet from surface waters. Any necessary equipment washing must occur where the water cannot flow into surface waters.
- The Project specifications will require the contractor to operate under an approved spill prevention and clean-up plan;
- Construction equipment will not be operated in flowing water;
- Raw cement, concrete or concrete washings, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to aquatic life must be prevented from contaminating the soil or entering surface waters;
- Equipment used in and around surface waters must be in good working order and free of dripping or leaking contaminants; and,
- Any concrete rubble, asphalt, or other debris from construction must be taken to an approved disposal site.

WQ-3: Prior to the start of construction activities, the Project limits in proximity to jurisdictional waters must be marked with high visibility Environmentally Sensitive Area (ESA) fencing or staking to ensure construction will not further encroach into jurisdictional waters.

WQ-4: Contract specifications will include the following BMPs, where applicable, to reduce erosion during construction:

- Existing vegetation will be protected in place where feasible to provide an effective form of erosion and sediment control;
- As a permanent BMP, slope roughening by equipment tracking will be implemented to create unevenness on bare soil. Surface roughening reduces erosion potential by decreasing runoff velocities, trapping sediment, and increasing water infiltration.

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6.2 Preparer(s) Qualifications

Preparers

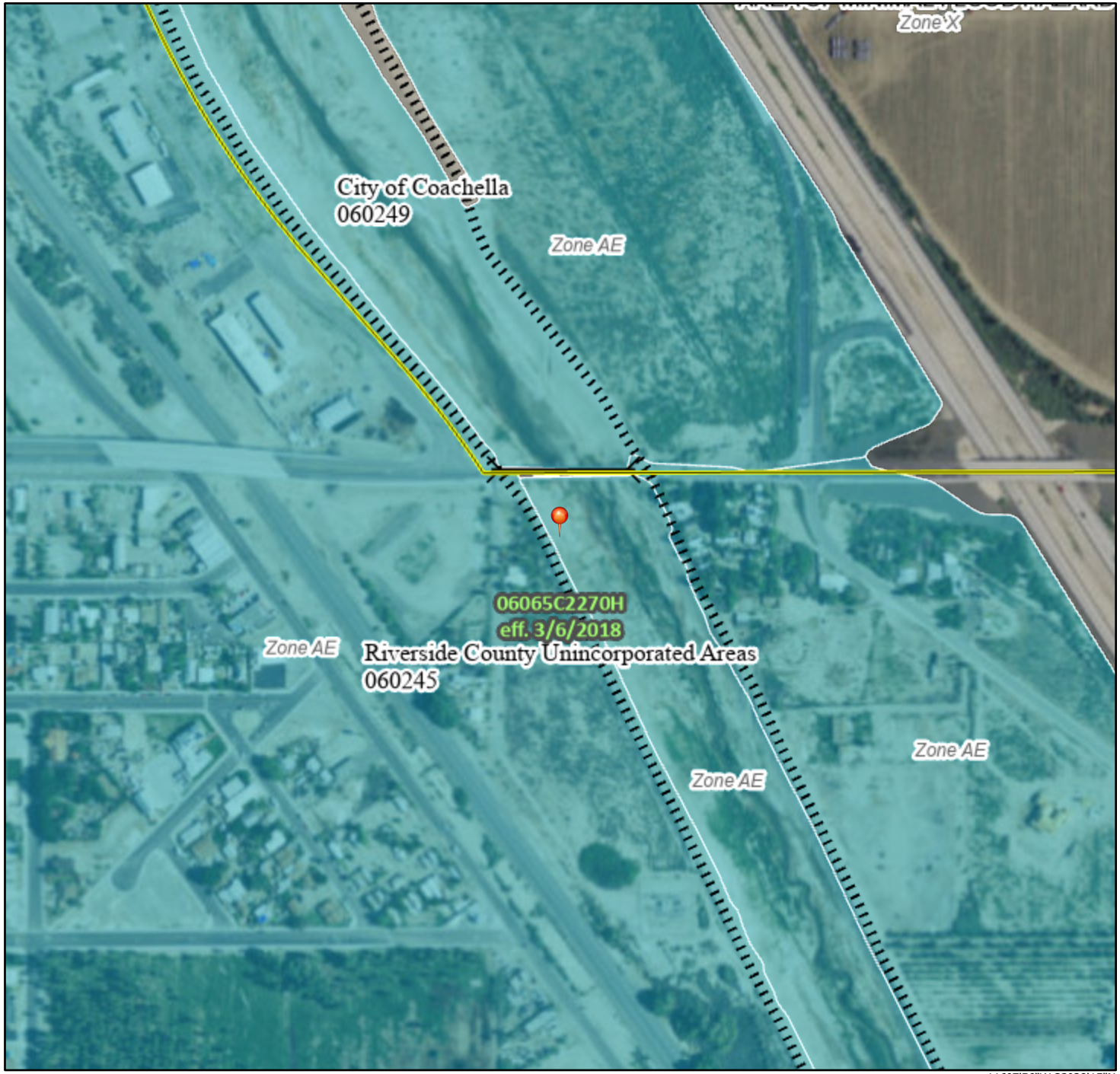
Zach Liptak, B.S. in Environmental Studies, nine years of experience in environmental analysis.

Appendix A. FEMA FIRMette Map

National Flood Hazard Layer FIRMette

FEMA

116°8'33"W 33°38'45"N



116°7'56"W 33°38'15"N

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

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/12/2022 at 11:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Appendix B. NRCS Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Riverside County, Coachella Valley Area, California

May 24, 2021

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

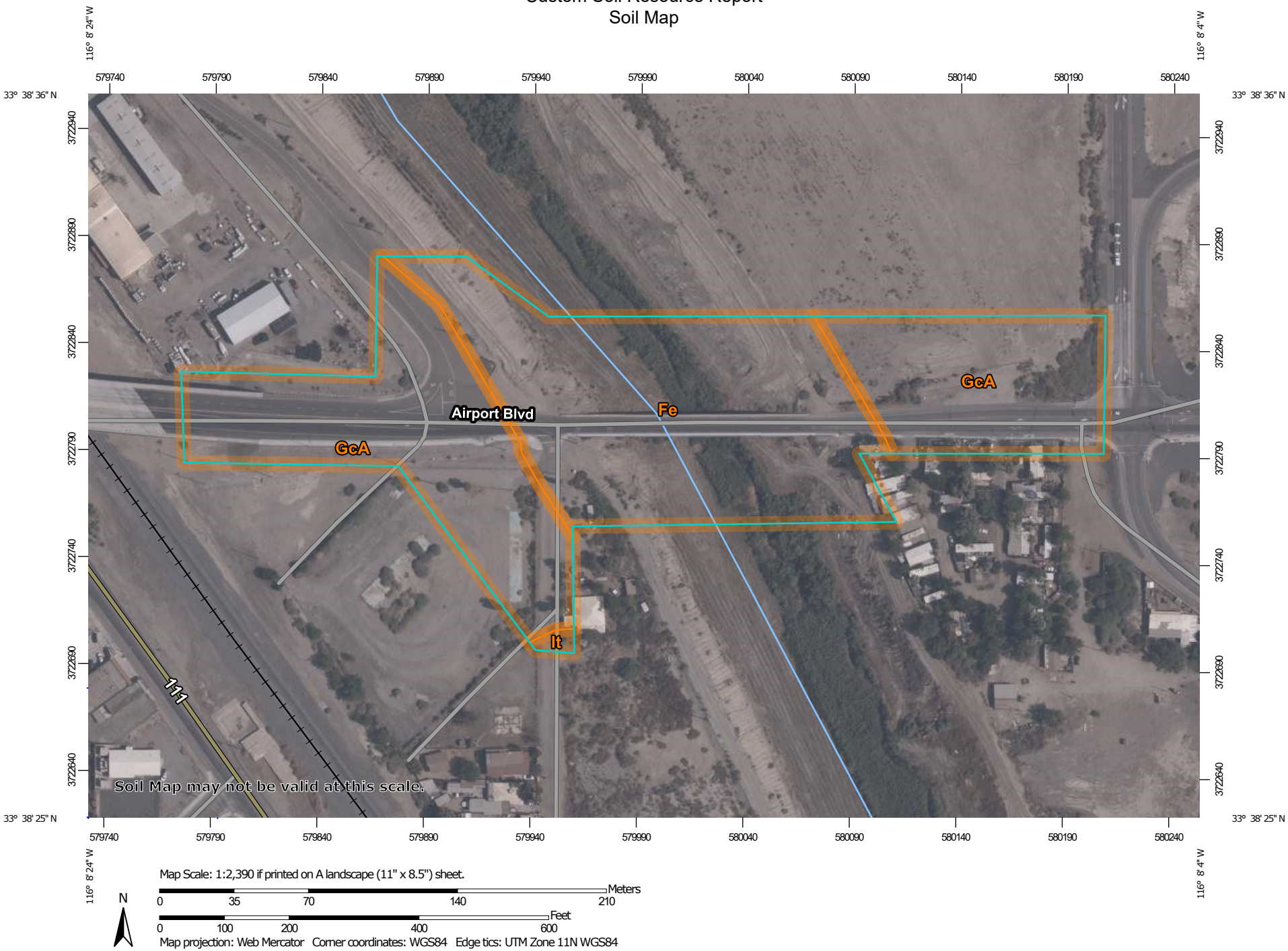
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,390 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 12, Jun 8, 2020

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

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

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

MAP LEGEND

MAP INFORMATION

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Fe	Fluvents	4.3	47.1%
GcA	Gilman fine sandy loam, wet, 0 to 2 percent slopes	4.8	52.5%
It	Indio very fine sandy loam, wet	0.0	0.5%
Totals for Area of Interest		**9.2**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Riverside County, Coachella Valley Area, California

Fe—Fluvents

Map Unit Setting

National map unit symbol: hkvj
Elevation: -230 to 400 feet
Mean annual precipitation: 14 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 270 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: sand
H2 - 10 to 30 inches: sand
H3 - 30 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Fluvaquents

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

GcA—Gilman fine sandy loam, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hkvn
Elevation: 400 feet
Mean annual precipitation: 4 inches
Mean annual air temperature: 72 degrees F
Frost-free period: 250 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Gilman and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilman

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 60 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed, sandy surface
Percent of map unit: 5 percent
Hydric soil rating: No

Coachella
Percent of map unit: 5 percent
Hydric soil rating: No

Indio
Percent of map unit: 3 percent
Hydric soil rating: No

Salton
Percent of map unit: 2 percent
Hydric soil rating: No

It—Indio very fine sandy loam, wet

Map Unit Setting
National map unit symbol: hkw1
Elevation: 300 feet
Mean annual precipitation: 4 inches
Mean annual air temperature: 72 degrees F
Frost-free period: 270 to 320 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition
Indio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indio

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile
H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 60 inches: very fine sandy loam

Properties and qualities
Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water capacity: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Gilman

Percent of map unit: 5 percent
Hydric soil rating: No

Salton

Percent of map unit: 5 percent
Hydric soil rating: No

Coachella

Percent of map unit: 5 percent
Hydric soil rating: No

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