



ORANGE COUNTY
CLERK-RECORDER
CEQA FILING COVER SHEET

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Hugh Nguyen, Clerk-Recorder



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THIS SPACE FOR CLERK'S USE ONLY

Complete and attach this form to each CEQA Notice filed with the County Clerk-Recorder

TYPE OR PRINT CLEARLY

Project Title

SYPHON RESERVOIR IMPROVEMENT PROJECT

Check Document being Filed:

- Environmental Impact Report (EIR)
- Mitigated Negative Declaration (MND) or Negative Declaration (ND)
- Notice of Exemption (NOE)
- Other (Please fill in type):

FILED

AUG 27 2024

HUGH NGUYEN, CLERK-RECORDER

BY: VG DEPUTY

FILED IN THE OFFICE OF THE ORANGE
 COUNTY CLERK-RECORDER ON August 27, 2024
 Posted for 30 days
 DEPUTY VG

PUBLIC AGENCY APPROVING PROJECT: Irvine Ranch Water District

PROJECT APPLICANT: Irvine Ranch Water District **PHONE:** (949) 453-5300

PROJECT APPROVAL: This is to advise that on July 26, 2021, the Irvine Ranch Water District's Board of Directors, at its meeting, acting as the Lead Agency, has made the following determinations regarding the Syphon Reservoir Improvement project:

- (a) The project will not have a significant effect on the environment.
- (b) An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
- (c) Mitigation measures were made a condition of the approval of the project.
- (d) A mitigation reporting or monitoring plan was adopted for this project.
- (e) A Statement of Overriding Considerations was not adopted for this project.
- (f) Findings were made pursuant to the provisions of CEQA.

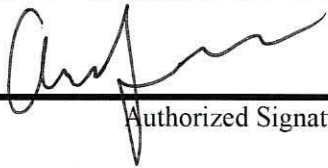
On August 26, 2024, the Irvine Ranch Water District's Board of Directors, at its meeting, approved the Addendum No. 1 to the Syphon Reservoir Improvement Project Final Environmental Impact Report and the following determinations were made in connection with the Syphon Reservoir Improvement Project:

- (a) The project will not have a significant effect on the environment.
- (b) An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
- (c) Mitigation measures were made a condition of the approval of the project.
- (d) A mitigation reporting or monitoring plan was adopted for this project.
- (e) A statement of Overriding Considerations was not adopted for this project.
- (f) Findings were made pursuant to the provisions of CEQA.

Based upon the evidence submitted and as demonstrated by the analysis included in Addendum No. 1, none of the conditions described in Sections 15162 or 15163 of the State. CEQA Guidelines calling for the preparation of a subsequent or supplemental EIR or negative declaration have occurred; specifically:

- (a) The Syphon Reservoir Off-Site Mitigation does not represent a substantive change in the Syphon Reservoir Improvement Project that would require major revisions to the CEQA Documents because of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- (b) There have not been any substantial changes with respect to the circumstances under which the Syphon Reservoir Improvement Project would be undertaken that require major revisions to the CEQA documents due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; and
- (c) There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the Syphon Reservoir Improvement Project EIR was certified as complete or adopted, that shows any of the following: (i) the Syphon Reservoir Improvement Project Off-Site Mitigation will have one or more significant effects not discussed in the Syphon Reservoir Improvement Project EIR; (ii) significant effects previously examined will be substantially more severe than shown in the Syphon Reservoir Improvement Project EIR or the other CEQA Documents.

STAFF CONTACT PERSON: Andy Uk, Environmental Compliance Analyst **PHONE:** 949-453-5326



Authorized Signature

Environmental Compliance
Analyst

Title

August 27, 2024

Date

FILED

AUG 27 2024

HUGH NGUYEN, CLERK-RECORDER

BY:  DEPUTY



HUGH NGUYEN
CLERK-RECORDER

BIRTH AND DEATH RECORDS
FICTITIOUS BUSINESS NAMES
MARRIAGE LICENSES/RECORDS
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ORANGE COUNTY ARCHIVES
PASSPORTS
PROPERTY RECORDS

IRVINE RANCH WATER DISTRICT
15600 SAND CANYON AVE
IRVINE, CA 92618

Office of the Orange County Clerk-Recorder
Memorandum

SUBJECT: NOTICE OF DETERMINATION - EIR

The attached notice was received, filed and a copy was posted on 07/27/2021

It remained posted for 30 (thirty) days.

Hugh Nguyen
Clerk - Recorder
In and for the County of Orange

By: Sandra Lopez

Deputy

Public Resource Code 21092.3

The notice required pursuant to Sections 21080.4 and 21092 for an environmental impact report shall be posted in the office of the County Clerk of each county *** in which the project will be located and shall remain posted for a period of 30 days. The notice required pursuant to Section 21092 for a negative declaration shall be so posted for a period of 20 days, unless otherwise required by law to be posted for 30 days. The County Clerk shall post notices within 24 hours of receipt.

Public Resource Code 21152

All notices filed pursuant to this section shall be available for public inspection, and shall be posted ***** within 24 hours of receipt** in the office of the County Clerk. Each notice shall remain posted for a period of 30 days.

*** Thereafter, the clerk shall return the notice to the local lead agency *** within a notation of the period it was posted. The local lead agency shall retain the notice for not less than nine months.

Additions or changes by underline; deletions by ***

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AUG 27 2024
HUGH NGUYEN, CLERK-RECORDER
BY: HL DEPUTY



ORANGE COUNTY
CLERK-RECORDER
CEQA FILING COVER SHEET

Recorded in Official Records, Orange County
Hugh Nguyen, Clerk-Recorder



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202185000581 8:34 am 07/27/21
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THIS SPACE FOR CLERK'S USE ONLY

Complete and attach this form to each CEQA Notice filed with the County Clerk-Recorder

TYPE OR PRINT CLEARLY

Project Title

SYPHON RESERVOIR IMPROVEMENT PROJECT

Check Document being Filed:

- Environmental Impact Report (EIR)
- Mitigated Negative Declaration (MND) or Negative Declaration (ND)
- Notice of Exemption (NOE)
- Other (Please fill in type):

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AUG 27 2024

HUGH NGUYEN, CLERK-RECORDER

BY: HN DEPUTY

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JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: [Signature] DEPUTY

POSTED

JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: [Signature] DEPUTY

FILED IN THE OFFICE OF THE ORANGE
COUNTY CLERK-RECORDER ON July 27, 2021

Posted July 27, 2021 Removed _____

Returned to agency on _____

DEPUTY SANDRA VALENCIA LOPEZ

Filing fees are due at the time a Notice of Determination/Exemption is filed with our office. For more information on filing fees and No Effect Determinations, please refer to California Code of Regulations, Title 14, section 753.5.



State of California - Department of Fish and Wildlife
2021 ENVIRONMENTAL FILING FEE CASH RECEIPT
 DFW 753.5a (REV. 01/01/21) Previously DFG 753.5a

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RECEIPT NUMBER:
 30 — 07/27/2021 — 0562
 STATE CLEARINGHOUSE NUMBER (If applicable)
 2019080009

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY IRVINE RANCH WATER DISTRICT	LEAD AGENCY EMAIL	DATE 07/27/2021
COUNTY/STATE AGENCY OF FILING Orange	DOCUMENT NUMBER 202185000581	

PROJECT TITLE

SYPHON RESERVOIR IMPROVEMENT PROJECT

PROJECT APPLICANT NAME IRVINE RANCH WATER DISTRICT	PROJECT APPLICANT EMAIL	PHONE NUMBER (949) 453-5326
PROJECT APPLICANT ADDRESS 15600 SAND CANYON AVE	CITY IRVINE	STATE CA
		ZIP CODE 92618

PROJECT APPLICANT (Check appropriate box)

- Local Public Agency
 School District
 Other Special District
 State Agency
 Private Entity

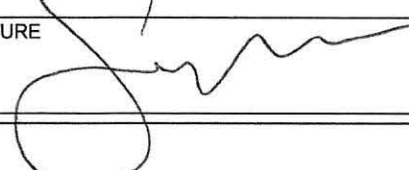
CHECK APPLICABLE FEES:

- | | | | |
|---|------------|----|-----------------|
| <input checked="" type="checkbox"/> Environmental Impact Report (EIR) | \$3,445.25 | \$ | <u>3,445.25</u> |
| <input type="checkbox"/> Mitigated/Negative Declaration (MND)(ND) | \$2,480.25 | \$ | <u>0.00</u> |
| <input type="checkbox"/> Certified Regulatory Program (CRP) document - payment due directly to CDFW | \$1,171.25 | \$ | <u>0.00</u> |
|
 | | | |
| <input type="checkbox"/> Exempt from fee | | | |
| <input type="checkbox"/> Notice of Exemption (attach) | | | |
| <input type="checkbox"/> CDFW No Effect Determination (attach) | | | |
| <input type="checkbox"/> Fee previously paid (attach previously issued cash receipt copy) | | | |

- | | | | |
|---|----------|----|-----------------------------|
| <input type="checkbox"/> Water Right Application or Petition Fee (State Water Resources Control Board only) | \$850.00 | \$ | <u>0.00</u> |
| <input type="checkbox"/> County documentary handling fee | | \$ | <u> </u> |
| <input type="checkbox"/> Other | | \$ | <u> </u> |

PAYMENT METHOD:

- Cash
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 Check
 Other
 TOTAL RECEIVED \$ 3,445.25

SIGNATURE 	AGENCY OF FILING PRINTED NAME AND TITLE DEPUTY CLERK, SANDRA VALENCIA LOPEZ
--	---

FILED

JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

Notice of Determination

BY: _____ DEPUTY

Appendix D

TO:

Office of Planning and Research
For U.S. Mail: P.O. Box 3044 Sacramento, CA 95812-3044
Street Address: 1400 Tenth Street Sacramento, CA 95814

County Clerk
County of: Orange
Address: 601 N. Ross St. Santa Ana, CA 92701

FROM:

Public Agency: Irvine Ranch Water District
Address: 15600 Sand Canyon Ave. Irvine, CA 92618
Contact: Jo Ann Corey
Phone: (949) 453-5326
Lead Agency (if different from above):
Address:
Contact:
Phone:

Subject: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2019080009

Project Title: Syphon Reservoir Improvement Project

Project Location (include county): The proposed project would be built within the IRWD service area at the site of the existing Syphon Reservoir, located in unincorporated County of Orange, California, on the northeast side of Portola Parkway between Bee Canyon Access Road and State Route 133.

Project Description: The proposed project would increase the capacity of the existing recycled water reservoir from approximately 500 acre-feet (AF) to 5,000 AF. The proposed project would replace the existing engineered dam with a new engineered dam, increasing the existing 59-foot dam height to 136 feet and increasing the elevation of the dam crest from the existing 388 feet above mean sea level (amsl) to 466 feet amsl. A new spillway would be included with the new dam to protect the reservoir from overtopping. As part of the new design, the engineered embankment dam would include a seepage control drainage system and a circulation system for the reservoir. The existing strainer and disinfection facilities would be demolished, reconstructed and expanded at the toe of the new dam to provide filtration and disinfection. Additional project features include new onsite access and maintenance roads; wetland and riparian mitigation areas; and potential recreational facilities.

30-27-27-0562

This is to advise that the Irvine Ranch Water District has approved the above described project on (Lead Agency or Responsible Agency)

July 26, 2021 and has made the following determinations regarding the above described projects. (Date)

- 1. The project [] will [x] will not have a significant effect on the environment.
2. [x] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA. [] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [x] were [] were not made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [x] was [] was not adopted for this project.
5. A statement of Overriding Considerations [] was [x] was not adopted for this project.
6. Findings [x] were [] were not made pursuant to the provisions of CEQA.

POSTED

JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: _____ DEPUTY

This is to certify that the final EIR with comments and responses and record of project approval, or the Negative Declaration, is available to the General Public at:

In Person: Irvine Ranch Water District, 15600 Sand Canyon Ave., Irvine, CA 92618

Electronically: <https://www.irwd.com/construction/syphon-reservoir-improvement-project>

Signature (Public Agency)



Title: Environmental Compliance Analyst

Date: July 27, 2021

Date Received filing at OPR: _____

POSTED

JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: _____

DEPUTY

FILED

JUL 27 2021

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: _____

DEPUTY

Orange County
Clerk-Recorder's Office
Hugh Nguyen

601 N. Ross Street
92701

County

Finalization: 20210000408290
7/27/21 8:34 am
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Item	Title	Count
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1	Z02	1
EIR: Environmental Impact Report		

Document ID	Amount
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DOC# 202185000581	3445.25
Time Recorded 8:34 am	

Total	3445.25
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Payment Type	Amount
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Amount Due	0.00
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ADDENDUM NO. 1 TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT FINAL ENVIRONMENTAL IMPACT REPORT

SCH #: 2019080009

Prepared for
Irvine Ranch Water District

August 2024



ADDENDUM NO. 1 TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT FINAL ENVIRONMENTAL IMPACT REPORT

SCH #: 2019080009

Prepared for
Irvine Ranch Water District

August 2024

633 West 5th Street
Suite 830
Los Angeles, CA 90071
213.599.4300
esassoc.com



Atlanta	Palm Beach County	San Diego
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TABLE OF CONTENTS

Addendum No. 1 to the Syphon Reservoir Improvement Project Final Environmental Impact Report

	<u>Page</u>
Section 1. Introduction	1
1.1 Overview.....	1
1.2 Background and Purpose of the Addendum	2
1.3 Regulatory Background	2
Section 2. Description	5
2.1 SRIP Project Description	5
2.2 SRIP Project Objectives	6
2.3 SRIP Public Participation and Project Approval.....	6
2.4 Proposed Modification	8
2.4.1 Description of SRIP Off-Site Mitigation	8
2.4.2 Construction	15
2.4.3 Operation and Maintenance	19
2.5 Energy Consumption	20
2.6 Proposed Approvals	20
2.7 References	21
Section 3. Evaluation of Environmental Impacts	23
3.1 Aesthetics	23
3.2 Agriculture and Forestry Resources	27
3.3 Air Quality	31
3.4 Biological Resources	41
3.5 Cultural Resources	53
3.6 Energy	57
3.7 Geology and Soils.....	61
3.8 Greenhouse Gas Emissions	65
3.9 Hazards and Hazardous Materials.....	70
3.10 Hydrology and Water Quality	76
3.11 Land Use and Planning	83
3.12 Mineral Resources.....	85
3.13 Noise	87
3.14 Population and Housing.....	91
3.15 Public Services	93
3.16 Recreation	96
3.17 Transportation	98
3.18 Tribal Cultural Resources	102
3.19 Utilities and Service Systems	106

	<u>Page</u>
3.20 Wildfire.....	110
3.21 Mandatory Findings of Significance	114
Section 4. Determination	117

List of Figures

Figure 1 SRIP Overview	7
Figure 2 Proposed SRIP Off-Site Mitigation	9

List of Tables

Table 1 Proposed Habitat Mitigation and SRIP Off-Site Mitigation Acreages.....	12
Table 2 Regulatory Permits and Authorizations.....	20
Table 3 Estimated Maximum Mitigated Regional Construction Emissions – SRIP and SRIP Off-Site Mitigation (pounds per day).....	35
Table 4 General Conformity – SRIP and SRIP Off-Site Mitigation.....	36
Table 5 Estimated Maximum Mitigated Localized Construction Emissions –SRIP Off-Site Mitigation (pounds per day)	38
Table 6 Annual Operational GHG Emissions – SRIP and SRIP Off-Site Mitigation.....	67

Appendices

- A. San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study
- B. Air Quality and Greenhouse Gas Emissions Calculations
- C. Biological Resources Technical Memorandum – SRIP Off-Site Mitigation

SECTION 1

Introduction

1.1 Overview

1. **Title:** Syphon Reservoir Improvement Project (SRIP) Off-Site Mitigation
2. **Lead Agency Name and Address:** Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618
3. **Contact Person and Phone Number:** Andy Uk, Environmental Compliance Analyst,
949-453-5326
4. **Location:** Southwest of Campus Drive on the northwest side of the San Diego Creek Levee, Irvine, CA
5. **Sponsor's Name and Address:** Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618
6. **General Plan Designation(s):** Preservation (PRA)
7. **Zoning:** Preservation (Zoning code 1.4)
8. **Description:**
See Section 2.4, *Proposed Modification* below.

9. Surrounding Land Uses and Setting:

The proposed mitigation site occupies an approximately 33.4-acre parcel owned by the Irvine Ranch Water District (IRWD) and is bordered by Campus Drive to the northeast and the San Diego Creek levee to the southeast. The University of California Natural Reserve System's (UC-NRS) 202-acre San Joaquin Freshwater Marsh Reserve occupies the area adjacent to the southwest and northwest sides of the IRWD property and includes a Seasonal Marsh area just to the northwest and a system of interconnected ponds to the southwest.

10. Other public agencies whose approval is required:

The SRIP Off-Site Mitigation may require approvals from the following agencies:

- See Table 2 in Section 2.6 below.

1.2 Background and Purpose of the Addendum

IRWD prepared a Final Environmental Impact Report (FEIR) for the Syphon Reservoir Improvement Project (SRIP) (State Clearinghouse No. 2019080009), and a Notice of Determination (NOD) approving the project was filed in compliance with Section 21108 and 21152 of the Public Resources Code on July 26, 2021. The SRIP would increase the storage capacity of the Syphon Reservoir from 500 acre-feet to approximately 5,000 acre-feet to serve the community's seasonal and future recycled water needs. Increased use of recycled water will make more drinking water available and help withstand future water shortages.

The SRIP FEIR determined that construction of the expanded reservoir would result in impacts to woody riparian and freshwater marsh habitats and stipulated that both on-site riparian/wetland habitat creation and off-site habitat mitigation would be provided to assure that no net loss of such habitats would occur and also to provide appropriate compensation for temporary loss of habitat value (i.e., temporal loss). SRIP FEIR Mitigation Measure BIO-4 noted that IRWD was working with the wildlife agencies to develop a mitigation program and stipulated that off-site land would be set aside for creation or restoration of habitat. At the time the SRIP FEIR was certified, a site had not yet been selected for the off-site riparian and wetland habitat mitigation component. In 2023, after extensive consultation with United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), the off-site mitigation area was selected at a 33.4-acre IRWD property in the San Joaquin Marsh south of Campus Drive in Irvine, California. USFWS and CDFW have accepted the overall mitigation package in concept and agreed that the implementation of proposed riparian/wetland mitigation, both on-site as part of the SRIP and off-site at the San Joaquin Marsh site, would adequately compensate for all impacts to riparian and wetland habitat and associated wildlife identified in the SRIP FEIR. The off-site riparian and wetland mitigation component at the San Joaquin Marsh is herein referred to as the Proposed SRIP Off-Site Mitigation. The purpose of this Addendum No. 1 is to describe and evaluate the potential environmental effects associated with the proposed SRIP Off-Site Mitigation (Public Resources Code §21166; California Environmental Quality Act [CEQA] Guidelines §15162; CEQA Guidelines §15168(c)(2)).

1.3 Regulatory Background

Per CEQA Guidelines Section 15168(c)(2), if the agency finds that pursuant to section 15162 no subsequent EIR would be required, the agency can approve the activity as being within the scope of the project covered by the EIR, and no new environmental document would be required.

Per CEQA Guidelines Section 15162, a subsequent EIR must be prepared if:

- Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration

due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

- New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
 - The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15164(a) of the CEQA Guidelines provides that an addendum to a previously certified EIR is permissible if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. As described in detail below, the proposed SRIP Off-Site Mitigation would not result in any of the conditions listed in CEQA Guidelines Section 15162. As a result, this Addendum has been prepared.

This Addendum relies on the significance criteria established in the CEQA Guidelines and the resource analysis methodology, described in the EIR, to assess the potential impacts related to the Proposed SRIP Modification. Each resource section presents a summary and a determination as to whether the proposed SRIP Off-Site Mitigation would result in new significant impacts, or a substantial increase in the severity of previously identified significant impacts. Any changes to mitigation measures resulting from preparation of this Addendum are presented in ~~strikeout~~ or underline text.

In compliance with CEQA Guidelines Section 15150, this Addendum has incorporated by reference the DEIR and FEIR for the SRIP, certified by IRWD in 2021, which includes all technical studies, analyses, and technical reports that were prepared as part of the DEIR and FEIR.

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SECTION 2

Description

2.1 SRIP Project Description

The SRIP would allow IRWD to increase the storage capacity of the existing recycled water Syphon Reservoir to help IRWD become more self-sufficient by reducing its dependence on costly and less reliable imported water during summer months, and support the increased use of recycled water for public landscaping, agricultural, business and industrial uses in IRWD's service area. Increased use of recycled water for these non-drinking water purposes would make more water available to the region to meet other treated or untreated demands, better withstand future water shortages, as well as improve the water supply reliability and resiliency to southern California.

The SRIP would replace the existing engineered dam with a new engineered dam, increasing the existing 59-foot dam height to 136 feet and increasing the elevation of the dam crest from the existing 388 feet above mean sea level (amsl) to 468 feet amsl. A spillway would be included with the new dam to protect the reservoir from overtopping. The existing dam includes a spillway that has never been used during its 62-year history, including during IRWD's ownership and operation of Syphon Reservoir. The new engineered dam would result in an increase in the reservoir's maximum water surface elevation from the existing 376 feet amsl to 456 feet amsl and increase the reservoir's approximate capacity from the existing 500 acre-feet to about 5,000 acre-feet. As part of the new design, the engineered embankment dam would include a seepage control drainage system and a circulation/aeration system for the reservoir. The existing strainer and disinfection facilities would be demolished, reconstructed and expanded at the toe of the new dam to provide filtration, chlorination and de-chlorination. Additional project features include new onsite access and maintenance roads; wetland and riparian mitigation areas; and potential recreational facilities.

Similar to existing operations, all recycled water flowing into and out of the Syphon Reservoir for storage would be controlled directly by IRWD. The delivery of recycled water to and from Syphon Reservoir would be accomplished by the addition of pumps within the offsite Eastwood Recycled Water Pump Station. The Eastwood pump station structure has been constructed to enhance IRWD's recycled water delivery systems. The pump station can accommodate the SRIP with the installation of additional pump equipment. Installation of the equipment would be coordinated as a separate "equipping project" in parallel to the construction of the proposed project. Existing offsite conveyance facilities would be used to deliver tertiary-treated recycled water from the Michelson Water Recycling Plant (WRP) to the Eastwood Recycled Water Pump Station, and then to Syphon Reservoir via an existing 36-inch recycled water pipeline. The existing Highline Canal would be abandoned in place and no longer used to deliver water from Rattlesnake Reservoir to Syphon Reservoir. Under normal operating conditions, all flow out of Syphon Reservoir would be conveyed back to the Eastwood Recycled Water Pump Station

through the same 36-inch recycled water pipeline, for connection to IRWD's recycled water distribution system (see **Figure 1**).

2.2 SRIP Project Objectives

The primary objective of the SRIP is to allow for an increase in IRWD's seasonal recycled water storage capacity. In implementing the proposed project, IRWD would:

- Improve local water supply reliability by reducing the need to purchase costly imported water from MWD by storing additional recycled water during low demand periods for use when needed during high demand periods;
- Ensure the new engineered dam and reservoir meet or exceed the current safety and design requirements established by the California Department of Water Resources (DWR), Division of Safety of Dams (DSOD), which is the governing state agency associated with this project;
- Reduce diversions of sewage to Orange County Sanitation District;
- Maximize the use of recycled water produced by IRWD for the benefit of IRWD customers; and
- Reduce recycled water discharges to the ocean.

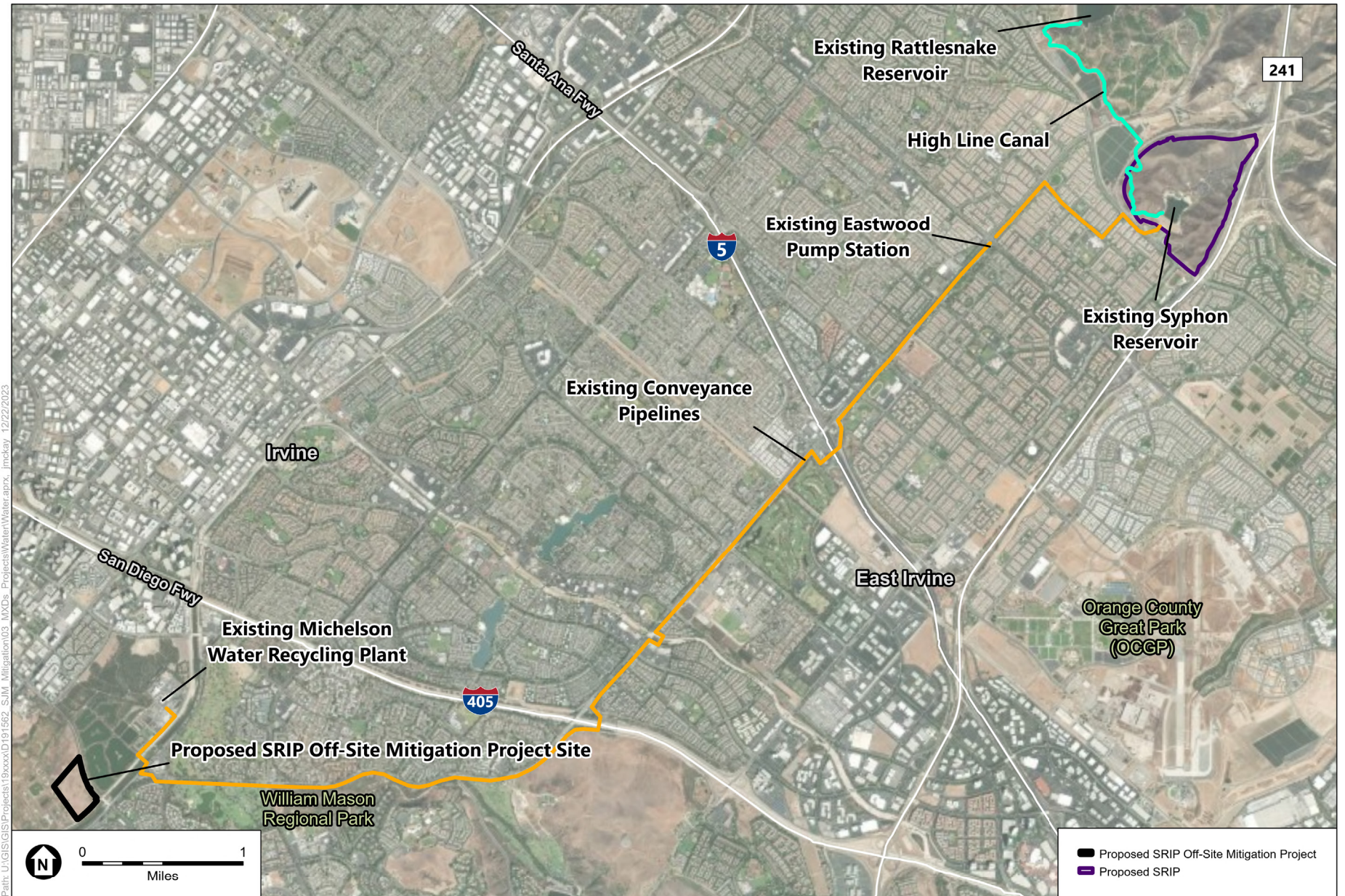
2.3 SRIP Public Participation and Project Approval

On August 2, 2019, IRWD published the Notice of Preparation (NOP) of an EIR for a 45-day review period. On August 21, 2019, in accordance with CEQA Guidelines Section 15082, IRWD held a public scoping meeting to describe the proposed project, to identify the environmental topics that would be addressed, and to describe the CEQA process for preparation of the EIR. To notify the public of the Scoping Meeting, IRWD published the legal notification in the *Orange County Register* in five languages, mailed a notification to area residents and posted information about the meeting on IRWD's website.

Once the Draft EIR (DEIR) was complete, a Notice of Completion (NOC) was submitted to the Office of Planning and Research (OPR) as required by CEQA (CEQA Guidelines Section 15085), along with copies of the DEIR for distribution to public agencies via the State Clearinghouse (CEQA Guidelines Section 15087(f)). At the same time, a Notice of Availability (NOA) of the DEIR was posted with the Orange County Clerk (CEQA Guidelines Section 15087(d)). The NOA also was published in the *Orange County Register* (per CEQA Guidelines Section 15087(d)). The NOA and DEIR were available at the following IRWD project website address:

<http://www.syphonreservoir.com>. Printed copies of the DEIR were available for public review at the following public library and the IRWD office as permitted if/when the restrictions due to facility closures and the need for social distancing required in response to the COVID-19 pandemic were lifted by the appropriate governmental agencies: Heritage Park Library, 14361 Yale Ave, Irvine CA 92604; and IRWD, 15600 Sand Canyon Avenue, Irvine, California 92618.

The DEIR was circulated for a 60-day public review period from March 19, 2021 to May 18, 2021. During this public review period, IRWD held one virtual public meeting via Zoom and telephonically, in accordance with State directives regarding public meetings held during the COVID-19 pandemic, to receive public comments on the environmental analysis in the DEIR.



SOURCE: ESA, 2023; Mapbox, 2023

SRIP Off-Site Mitigation Project

Figure 1
SRIP Overview

During the public review period, public outreach and notification efforts were conducted to raise awareness about the availability and contents of the DEIR and to encourage public participation. Outreach efforts included the following:

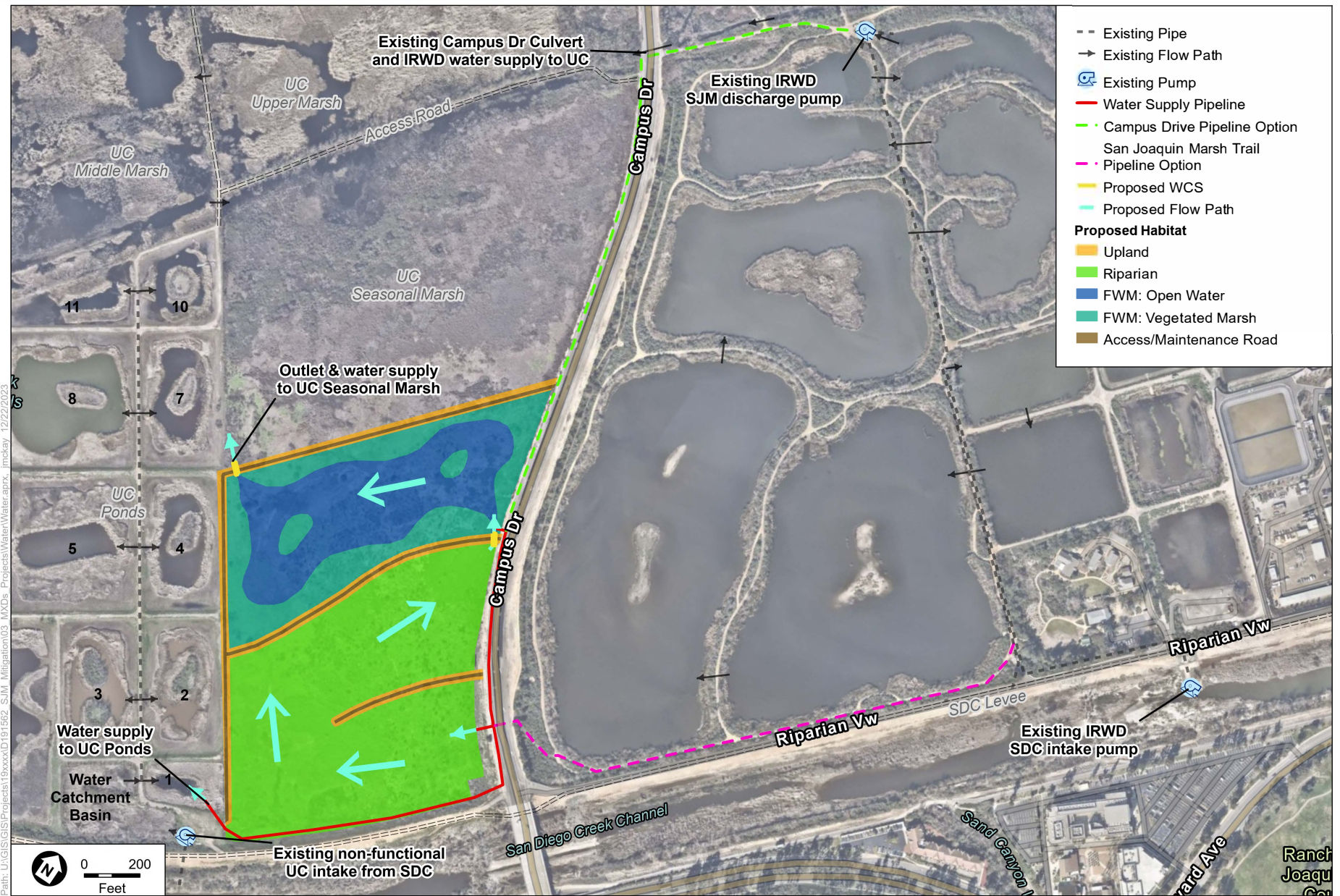
- Information was included in an IRWD newsletter that was mailed or emailed to all 128,334 IRWD customer households;
- A Syphon Reservoir Improvement Project overview video, offered in English, Korean and Chinese, was posted to YouTube and targeted to IRWD customers and surrounding residents (the videos received more than 41,000 views in a four-week timeframe);
- Individual postcard mailers were sent to more than 2,000 households;
- More than 100 email notifications were sent to elected officials and stakeholder organizations, including the offer for a briefing;
- Briefings with stakeholders;
- Coordination with the City of Irvine to notice the public meeting and comment period; and
- Social media and website notifications.

IRWD certified and approved the Final EIR and a Notice of Determination for the project was filed with the County Clerk in Orange County and State Clearinghouse on July 27, 2021. The Final EIR can be accessed at www.syphonreservoir.com.

2.4 Proposed Modification

2.4.1 Description of SRIP Off-Site Mitigation

At the time the SRIP FEIR was certified, a site had not yet been selected or fully vetted for implementing the off-site riparian and wetland habitat mitigation component. In 2023, after extensive consultation with the wildlife agencies (i.e., USFWS and CDFW) and careful consideration of feasibility issues, the off-site mitigation area for SRIP was selected. The proposed SRIP Off-Site Mitigation is located on a 33.4-acre parcel owned by IRWD in the San Joaquin Marsh and is bordered by Campus Drive to the northeast and the San Diego Creek levee to the southeast as shown on **Figure 2**. To the west are a series of freshwater ponds that are owned and managed for research purposes by the UC-NRS. On the northeastern side of Campus Drive, opposite the SRIP Off-Site Mitigation site, are additional freshwater ponds and marshes that are owned and operated by IRWD for water quality treatment and habitat functions. The proposed SRIP Off-Site Mitigation site currently supports some remnant native riparian vegetation and small patches of alkali meadow in addition to a few patches of native scrub and chaparral shrubs mixed with co-dominant ruderal (weedy) vegetation. The site lies within an area of the Orange County Central-Coastal Natural Communities Conservation Plan / Habitat Conservation Plan (NCCP/HCP) that is designated as “Non-Reserve Open Space” and as such is subject to NCCP/HCP requirements.



SOURCE: ESA, 2023; Mapbox, 2023; IRWDNAIP

Note: FWM=Freshwater Marsh, SDC=San Diego Creek, WCS=Water Control Structure

SRIP Off-Site Mitigation Project

Figure 2
Proposed SRIP Off-Site Mitigation



The SRIP Off-Site Mitigation is required to compensate for impacts to riparian and wetland habitat and associated wildlife identified in the SRIP FEIR. Implementation of the SRIP Off-Site Mitigation would include establishment of a mix of riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation site would be modified by first removing the predominant ruderal (weedy) vegetation, along with organic detritus and dead willow logs on the surface, and then by creating swales and channels and berms to form riparian and freshwater marsh cells. Native riparian and freshwater vegetation would then be established, supported by a supplemental irrigation system at the site provided each year during the rainy season in perpetuity via a flow-through system. The *San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study* (**Appendix A** to this Addendum; ESA 2023) details the conceptual plan for the site. Maintenance (both short-term establishment and a long-term phase) of the mitigation site would be required to ensure success.

As shown on **Figure 2**, the southeastern portion of the site is planned to become woody riparian habitat and the northwestern portion is planned for freshwater marsh habitat. Water would enter the mitigation site from two points along Campus Drive to sustain the riparian habitat cells and the freshwater marsh area. Water for the SRIP Off-Site Mitigation would originate from stormwater and urban runoff that has circulated through the San Joaquin Marsh ponds after being pumped from San Diego Creek. Additionally, IRWD proposes to extend the water supply pipeline along the southeast side of the site to provide a new water supply connection to the existing UC-NRS San Joaquin Freshwater Marsh Reserve Experimental Ponds which lie directly adjacent to the proposed SRIP Off-Site Mitigation site. This new water supply location, which was coordinated with the UC-NRS San Joaquin Marsh Reserve managers, will have the advantage of providing water from IRWD to the UC-NRS marsh at a significantly higher elevation than the existing connection from IRWD under Campus Drive. That would provide an advantage for the UC-NRS wetland managers to control distribution of water supplied from IRWD at the proposed new input location via gravity rather than pumping from the lower elevation in the marsh, which has historically posed challenges. Berms would be provided along the southwestern and northwestern perimeter and also through the center of the site (where the marsh and riparian woodland areas are separated) to provide for access/maintenance as well as to define the limit of the mitigation area cells. Prior to and during construction, a silt fence would be securely installed and regularly inspected and maintained along the site perimeter to prevent small terrestrial animals, particularly southwestern pond turtles (*Actinemys pallida*), from entering the active construction area.

The proposed SRIP Off-Site Mitigation concept plan involves establishment of a mix of riparian woodland and freshwater marsh habitats to compensate for impacts to similar habitat that would result from implementation of the SRIP. The off-site riparian/wetland mitigation requirements are that IRWD will provide approximately 9.6 acres of riparian woodland/riparian scrub habitat and approximately 10.66 acres of freshwater marsh. The conceptual plans for the SRIP Off-Site Mitigation at the San Joaquin Marsh show that the proposed habitat mitigation will include approximately 12.08 acres of freshwater marsh and open water, with up to 16.29 acres available for riparian woodland and scrub habitat, which exceeds the requisite off-site mitigation for the SRIP. However, the final plan for the SRIP Off-Site Mitigation will also incorporate protection or replacement of the existing patches of alkali meadow plant community on-site. This plant

community, which consists predominantly of alkali heath (*Frankenia salina*) is considered a sensitive resource and is, therefore, planned to be conserved on-site. The inclusion of 0.40 acre of alkali meadow vegetation in the modified final plan will reduce the total area available for riparian woodland and scrub habitat to 15.89 acres of riparian habitat, which still exceeds the 9.6 acres required for the off-site SRIP mitigation. Furthermore, as described below, some of the riparian woodland habitat that will be restored by the proposed SRIP Off-Site Mitigation will be accounted for as replacement for the remnant riparian vegetation that currently exists on-site.

A total of 2.75 acres of remnant willows (1.45 ac.), mixed black willow / tree of heaven patches (0.81 ac.), and mule fat scrub (0.49 ac.) are mapped within the subject property. These remnant riparian communities are in relatively poor condition due to progressive displacement by exotic plants and poor natural hydrology. However, native riparian willow woodland and scrub habitat is considered a sensitive resource, and despite the poor condition of the existing habitat areas, these resources still provide habitat for wildlife. Therefore, the proposed SRIP Off-Site Mitigation will protect the existing vegetation in place where practical and replace any displaced native riparian vegetation such that the total 2.75 acres of extant riparian vegetation will be protected or reestablished by the proposed mitigation implementation.

As noted above, the final plans for the SRIP Off-Site Mitigation will also protect or replace 0.40 acres of alkali meadow habitat consisting of alkali heath patches. Therefore, after that modification is incorporated into the final plan, that will reduce the available riparian habitat on the site to 15.89 acres. Finally, because the plan will preserve or replace the full 2.75 acres of existing remnant willow woodland and scrub within the area designated for riparian habitat, that will leave approximately 13.14 acres to be available for mitigation purposes. Since the off-site riparian mitigation required for SRIP is 9.6 acres, there will be up to 3.54 acres more riparian habitat than needed for SRIP mitigation.

The conceptual plan also includes establishing approximately 2.20 acres of native upland vegetation representative of coastal sage scrub habitat on the slopes of the proposed berms above the zone of saturation and potentially on areas that may be disturbed during construction along the San Diego Creek levee and the slope below Campus Drive where the upland species will not be subject to inundation or saturation.

The approximate acreages of riparian woodland and freshwater marsh habitat mitigation that are expected to be required to fulfill the SRIP Off-Site Mitigation are listed below in **Table 1**, which are compared to the acreages of each habitat type to be established by the proposed SRIP Off-Site Mitigation, excluding the acreage of existing alkali meadow and remnant riparian vegetation on-site that will be preserved or replaced and would not be counted as mitigation.

As discussed and agreed to by and between IRWD, USFWS, and CDFW, any extra woody riparian or marsh habitat acreage established at the site that exceeds the established SRIP mitigation requirements may be used by and for IRWD as compensatory mitigation for impacts to similar habitat associated with other future IRWD projects. Such use of surplus habitat acreage as mitigation, which are identified in **Table 1**, would be subject to future project permit conditions, mitigation ratios and requirements.

TABLE 1
PROPOSED HABITAT MITIGATION AND SRIP OFF-SITE MITIGATION ACREAGES

Habitat Type	Minimum Required	SRIP Off-Site Mitigation	Excess Available Mitigation Acreage
Riparian Woodland / Riparian Scrub	9.6 ac	13.14 ac	3.54
Freshwater Marsh	10.66 ac	12.08 ac	1.42
Upland Sage Scrub	n/a	2.20 ac	2.20
Total	20.26 ac	27.42 ac	7.16

Channels and Berms

The riparian woodland area would involve the creation of three channels that convey water throughout the cell. Within the rest of the riparian cell, the ground surface would be graded to slope and drain to the channels.

The freshwater marsh area would consist of inflow and outflow channels and a central open water area. The open water would promote mixing with fringe vegetated areas and islands. The surrounding marsh area would be graded to slope and drain from the cell perimeter berms to the open water area. A clay layer may be installed at the bottom of the freshwater marsh to decrease permeability, manage moisture, and enhance hydrology for the freshwater marsh and open water habitat.

Berms would be constructed to provide maintenance access and hydraulic separation between the two areas. An additional berm is included to guide flow through the riparian area as shown in **Figure 2**. Additionally, the proposed perimeter berm along the UC-NRS San Joaquin Marsh property line would replace the existing small berm separating the UC-NRS and IRWD parcels. The excavated soils from installation of the channels and open water area would be used to create berms that form individual cells.

Irrigation Infrastructure

Supplemental Irrigation System Water Supply Pipeline

During the long-term maintenance phase, the proposed SRIP Off-Site Mitigation would be irrigated with stormwater and urban runoff that has circulated through the San Joaquin Marsh ponds after being pumped from San Diego Creek. Stormwater and urban runoff are currently circulated through the San Joaquin Marsh via the San Diego Creek intake pump¹ as shown on **Figure 2**. From the intake pump, stormwater and urban runoff are gravity fed through ponds in a northwestern direction and returned to San Diego Creek via the IRWD San Joaquin Marsh pump station and associated pipeline. The Proposed SRIP Off-Site Mitigation's new riparian woodland and freshwater marsh cells would receive water from the existing San Joaquin Marsh pump station, which would be modified by installation of a new control valve to alternate flow between

¹ When San Diego Creek flows are between approximately 2 cfs and 18.6 cfs

multiple outlet points from the pump station. The existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration.

Water for the proposed SRIP Off-Site Mitigation would be delivered via a new 12-inch water supply pipeline that would convey water from the existing IRWD San Joaquin Marsh pump station. The water supply pipeline route has been identified in the immediate vicinity of the riparian and freshwater marsh cells where it would extend along Campus Drive, with two 10-inch pipelines extending into the riparian and freshwater marsh areas. IRWD is considering two pipeline options to convey water from the San Joaquin Marsh pump station to the segment along Campus Drive. The Campus Drive Pipeline Option would connect the San Joaquin Marsh pump station and SRIP Off-Site Mitigation site via Campus Drive to the north and would be approximately 3,335 feet in length. The San Joaquin Marsh Trail Pipeline Option would connect the site and the 18-inch San Diego Creek outfall pipe via the southernmost San Joaquin Marsh trail and would be approximately 2,824 feet in length. Both options are discussed further below and shown in **Figure 2**.

The pipeline would also be constructed to provide a new alternative water supply connection to UC Pond 1, such that the UC-NRS marsh could receive water supply directly to the UC Pond system at the highest pond elevation. This approach would benefit the UC-NRS Marsh by improving the efficiency of distributing water within the marsh via gravity. Water is currently only supplied to the UC-NRS marsh via a culvert under Campus Drive located at the lowest point of the marsh. From the connection point where water would enter the Mitigation site at the southeastern corner of the site, a 10-inch pipeline approximately 1,500-feet long would continue south, turn southwesterly along the toe of the San Diego Creek levee, and extend beyond the southwestern site limit to UC Pond 1 as shown in **Figure 2**. The pipeline could be installed in the San Diego Creek levee access road instead of along the toe of the levee, which would require coordination with Orange County Public Works. Management of the water supply to the UC-NRS will be consistent with the terms set forth in the Agreement Between UC and IRWD Concerning Diversion of Water Pursuant to Riparian Water Right, executed in 2020 (IRWD & UC 2020).

Water supplied via the new pipeline from the IRWD San Joaquin Marsh on the opposite side of Campus Drive could be managed on a flexible schedule to irrigate the SRIP Off-Site Mitigation site when water is available (e.g., when flows in San Diego Creek are above 2 cubic feet per second (cfs) and/or when water is not being supplied to the San Joaquin Marsh's Michelson and Carlson Marshes). The proposed SRIP Off-Site Mitigation would require a total diversion and irrigation amount of approximately 41 to 61 million gallons per year, with less irrigation warranted in wet years and more in dry years. The proposed diversion would occur only during the wet season. This annual volume is 4.2 to 6.2 acre-feet per acre (ac-ft/ac), which can be thought of as the "depth" of water supplied to the area over a year. Initial irrigation requirements could be higher (initially) as vegetation cover becomes established.

Campus Drive Pipeline Option

The Campus Drive Pipeline Option would connect a new water pipeline to the existing 18-inch San Joaquin Marsh pump station outflow pipeline immediately downstream of the pump station. The new water pipeline would then proceed southwesterly toward Campus Drive in the northern

San Joaquin Marsh trail as identified in **Figure 2**. The pipeline would cross underneath Campus Drive at an existing culvert and then turn south within the Campus Drive right of way toward San Diego Creek to connect with the main line.

San Joaquin Marsh Trail Pipeline Option

The San Joaquin Marsh Trail Pipeline Option would connect a new water pipeline to the existing 18-inch San Joaquin Marsh pump station outflow pipeline at the southernmost end just upstream of the San Diego Creek outflow point. This option connects upstream of the existing pressure reducing valve, which would be reconfigured to upsize the intersection and include a tee to the new pipeline, which would proceed south to the existing San Joaquin Marsh trail. The San Joaquin Marsh Trail Pipeline Option would continue southwesterly in the trail toward Campus Drive before following the trail to the west and crossing underneath Campus Drive, where it would connect to the riparian and freshwater marsh cells.

Appurtenant Facilities

Water would be conveyed into and out of the riparian woodland via two flow control structures. In each of the inflow/outflow structures, three flashboard risers would be installed to split flow through the three riparian channels.

A culvert with headwalls and rock riprap outflow scour protection would be located through the access berm to convey water from the riparian cell to the freshwater marsh cell. A similar culvert structure with an added flashboard riser would be located in the northwest corner of the freshwater marsh cell to facilitate drainage/maintenance of the cell as needed, with outflow to the UC-NRS Seasonal Marsh.

Temporary Overhead Spray Irrigation System

During the initial establishment of vegetation, a temporary irrigation system would be installed with an automated, above-ground irrigation network for the riparian and upland (buffer) areas. An overhead spray system with sprinkler heads on risers may be preferred, although drip emitters (e.g., for upland sage scrub container plant groupings) could also be used. It is intended that temporary irrigation be used judiciously as a potential supplement to rainfall and naturally occurring soil moisture. Temporary irrigation would likely be phased out and discontinued several years before the end of an establishment period to help confirm the habitats are established and self-sustaining. Once temporary irrigation use is phased out, the system components could be removed from the site.

Habitat

There are three primary habitats that are planned to be revegetated and established as part of the Proposed SRIP Off-Site Mitigation, which include: freshwater marsh that will be subject to perennial inundation; riparian willow scrub (in the southern portions of the site and adjacent and above the freshwater marsh at the base of the interior berms) that will have saturated soil for part of the growing season and be within approximately 6 feet of groundwater; and upland sage scrub (along exterior berm slopes and upper portions of interior berm slopes adjacent and above riparian planting areas). It is expected in the interface of these habitats there will be ecological and habitat ecotone transition areas with a mixture of planted / seeded and volunteer species. In

addition, final plans will integrate patch areas where alkali heath displaced by construction would be replaced. Soil amendments may be needed to improve the rate of revegetation establishment. The anticipated planting/habitat establishment period is three to five years.

Future phases of the design may consider an option for an on-site temporary propagation facility, which could be established for production of some of the recommended plant material. It is estimated that a propagation facility, including associated work areas, would temporarily occupy up to approximately one - half acre depending on its scale and the number of plants that would be produced and stored. Electricity and water would need to be provided.

2.4.2 Construction

Schedule

Construction would ideally begin in August or September to facilitate seeding and planting at the start of the wet season (see Habitat section below). The individual phase durations are listed below. Construction would be initiated in September 2025 and be finished by June 2027, and would occur at the same time as the SRIP. The water supply pipeline could be constructed concurrently with the other three sequential phases of work (site preparation, grading and planting).

- Site Preparation – 1 month
- Channels and Berms – 3 months
- Irrigation Infrastructure – 3 months
- Site Planting and Establishment Period – 15 months

Site Preparation

Prior to and during construction, a silt fence would be securely installed along the sections of the SRIP Off-Site Mitigation site perimeter adjacent to the UC-NRS property to demarcate the mitigation site “edge” and to prevent small terrestrial animals from entering the active construction area. Then the site would be cleared and grubbed. Where practical, some existing native vegetation may be protected in place where that would not interfere with design contours, elevations, and gradients needed to establish the planned habitat areas. Equipment required to clear and grub the site may include a mower, front-loader, truck and bulldozer. Certain desirable natives within the riparian woodland cell could be protected in place. All grubbed material (between 12,000 to 18,000 cubic yards) would be removed and disposed of as greenwaste. The nearest facility is Tierra Verde Industries in Irvine, though a local landfill could also be used. Dead willow logs may be chipped and reused as a top dressing and carbon source in the riparian cells, potentially reducing the volume of material that needs to be removed. Conservatively, hauling of greenwaste could result in 300 to 500 total truck trips to/from the site, assuming use of 40 cubic yard roll-off containers. Spread out over the construction period, this could result in 15 to 25 round trip haul trips per day over the one-month site preparation phase.

A total of up to 5 workers would be needed per day for site preparation.

Channels and Berms

Construction of the riparian and freshwater marsh areas would require approximately 80,000 cubic yards of earthwork balancing onsite. Soils excavated to create the freshwater marsh open water and riparian channels would be reused onsite to create the berms and balance interior surface grading (cut/fill) of the riparian and freshwater marsh areas. If the onsite soil is not suitable for reuse to create berms, up to 22,000 cubic yards of fill would need to be imported to the site and 29,000 cubic yards would need to be disposed of offsite. This would result in approximately 3,600 total truck trips to/from the SRIP Off-Site Mitigation site, assuming 14 cubic yards of material per truck. Spread out over the site grading phase, this could result in approximately 60 round trip haul trips per day over the three-month site grading phase. Construction equipment could include compactors, excavators, graders, off-highway trucks, scrapers, water trucks, tractors/loaders/backhoes, and bulldozers. Dimensions for specific features are identified below:

- The three riparian channels would each be 3 feet wide and 1 foot deep, with a low slope (up to 0.5 feet elevation change) along the length of each of the channels. Each channel would be approximately 1,600 to 2,200 feet long.
- The open water area would be excavated approximately 2 to 5 feet to a bottom elevation of 5.5 feet North American Vertical Datum of 1988 (NAVD88).
- Berm construction would include base preparation, e.g., removal of the top 1 foot of soil after clearing and grubbing. Berms surrounding the cells would range in height from 2 to 5 feet above existing grade. The proposed berm top width would be 12 feet to support vehicular access.
- Interior cut and fill (up to 1 to 2 feet) is needed within the freshwater marsh and riparian areas to create positive drainage in each cell.

Water flow through the mitigation site would be controlled by the following structures that are integrated with the site grading elements listed above:

- Riparian flow control basins – water would be conveyed into and out of the riparian woodland via distribution and outflow basins, respectively, each enclosed by a small perimeter berm.
- Flashboard flow control structures– three structures built into the inflow distribution basin and outflow basin berms will split/merge flow through the three riparian channels.
- Culverts – a culvert with headwalls and rock riprap outflow scour protection would be located through the access berm to convey water from the riparian cell to the freshwater marsh cell. A similar culvert structure with an added flashboard riser would be located in the NW corner of the freshwater marsh cell to facilitate drainage/maintenance of the cell as needed, with outflow to the UC-NRS Seasonal Marsh.

Installation of the above structures would occur during/after grading at the installation locations with the workers present for grading.

A total of up to 14 workers would be needed per day during site grading.

Irrigation Infrastructure

Overhead Temporary Irrigation

A temporary overhead spray system with sprinkler heads on risers or drip emitters would be installed to provide temporary irrigation for the establishment of planted and seeded species. Electricity would be required to operate the system and a connection would be made to an existing meter off Campus Drive.

Water Supply Pipeline and Appurtenant Facilities

Construction of the water supply pipeline would involve conventional cut and cover trenching technique and could use concrete/industrial saws, jack hammers, hydraulic hammers, dump trucks, skidders/dozers, excavators/backhoes/loaders, trenchers, pumps, baker tanks, water tankers, haul trucks, hoppers, rollers/compactors, and plate compactors. The trenching activities would include saw cutting of the pavement where applicable, trench excavation, trench shoring, pipe installation, trench backfill and compaction, site restoration/pavement replacement, as applicable, and testing. Approximately 2,900 cubic yards of ground material would be excavated for the water supply pipeline trenching. Of that total excavation, approximately 1,400 cubic yards can be used onsite as trench backfill, and 1,500 cubic yards of trench spoils would need to be disposed of offsite. This would result in approximately 108 truck trips to/from the SRIP Off-Site Mitigation site, assuming 14 cubic yards of material per truck. Fill may need to be imported to the site for pipe bedding sand, trench bottom rock, and road base rock if applicable. Approximately 1,600 cubic yards of rock and sand materials would need to be imported, which would result in approximately 115 truck trips. Over the three-month irrigation infrastructure phase, up to 4 round trip truck trips would be required per day for import/export associated with the water supply pipeline. Future construction planning would determine if any export and import trips can be combined. The water supply pipeline would be installed up to 8 feet below ground surface (bgs). Localized trench and pipeline dewatering may be required, and water collected from dewatering would be discharged to the nearest sewer manhole or stormwater system if no manhole is available.

Construction of the pipeline would require room for access, staging, and off-loading of materials and spoil, which would be accommodated within the site or within the right-of-way of Campus Drive. Approximate typical pipeline progress is 80 feet per day. Trenches would be backfilled at the end of each work day or temporarily closed by covering with steel trench plates. Once constructed, pipeline segments would be contained entirely below ground, except for any above-grade pipeline appurtenances such as air/vacuum valves or hydrants.

Work within roadways would potentially require localized closure of Campus Drive and trails along the San Diego Creek levee and marsh area. Traffic and pedestrian control would be necessary during pipeline construction within roadways and trails. Typically, two to four workers would be required for traffic control during pipeline installation. Equipment necessary for traffic control would include changeable message signs, delineators, arrow boards, and K-Rails. The Traffic Control Plan for the proposed SRIP Off-Site Mitigation would be coordinated with the City of Irvine.

For the crossing of Campus Drive, the water supply pipeline would be required to cross an existing 12-inch water main and 6-inch high pressure gas line. The San Joaquin Marsh Trail Pipeline Option would also cross an AT&T telecommunication line. The proposed pipelines would be AWWA C-900, DR-14 PVC and include the required intersection control valving as well as air release and blowoff assemblies, and flow metering for each of the two project services.

A total of up to 6-12 workers would be needed per day for construction activities associated with pipeline installation.

Habitat

There are three primary habitats that are planned to be revegetated and established in the mitigation site: freshwater marsh that will be subject to perennial inundation; riparian willow scrub that will have saturated soil for part of the growing season and be within approximately 6 feet of groundwater; and upland sage scrub. Patches of alkali meadow vegetation, consisting predominantly of alkali heath, will also be established to replace up to 0.40 acres of this vegetation displaced by construction.

The freshwater marsh container plant palette and seed mix includes a combination of bulrush (e.g., *Schoenoplectus* and *Bolboschoenus* spp.) and other appropriate species. The proposed freshwater marsh seed mix is intended only to be applied to the higher elevation portions of the freshwater marsh (and not applied to areas that will be inundated). The riparian willow scrub container plant palette includes a combination of native understory species with some shrubs and overstory tree species to establish stratified canopy layers. The riparian willow scrub seed mix will be evenly applied within the riparian habitat mitigation area. For the species in the upland sage scrub container plant palette, it is intended that planting will occur in groupings of approximately 6 to 10 plants with spacing between plants of approximately 6 feet. The plant groupings should be easier to irrigate and maintain and will provide initial groupings of shrubs that would be expected to expand over time. The upland sage scrub seed mix will be evenly applied within the upland revegetation area.

Site preparation for planting includes scarifying/decompaction of the finished grades with a discer (0.5 months with 4 workers). Additionally, a temporary irrigation system is proposed for the 15 acres of riparian willow scrub (6 months, 10 workers with a flatbed truck). Flagging planting areas would take 3.5 months with 4 workers. Planting would take 4 months with 16 workers, followed by seeding over 0.5 months with 4 workers.

After grading and site preparation, the preferred period to plant and seed is in the fall and winter months (between late October/November and mid-January) to take advantage of the rainy season and install plants when conditions are cooler and moister. In the event that an on-site propagation facility is not used, plants and other materials would be transported to the site resulting in approximately 90 total truck trips to/from the site. All the plants should initially be watered as part of installation, unless the soil is already wet or saturated.

After container plant (and pole cutting) installation, seeding can proceed. Application of freshwater marsh seed is proposed to occur by hand within the higher elevation areas of the

freshwater marsh, followed by raking to incorporate the seed into the top one-quarter inch of soil. Application of the riparian willow scrub and upland sage scrub seed mixes is proposed to occur by a hydroseeding method with a slurry mix of seed, organic hydromulch (at a rate of between 1,500 to 2,500 pounds [lbs.] per acre depending on slope gradients), and organic tackifier (binder) at a rate of approximately 150 lbs. per acre. A total of up to 6 to 20 workers would be needed per day for construction activities associated with this phase.

2.4.3 Operation and Maintenance

Channels and Berms

Operation of the channel and berms would involve annual inspection of berms for evidence of failure by erosion, burrowing animals, windthrow of vegetation, or other causes.

Irrigation Infrastructure

The water supply pipeline would be installed underground and would not require regular maintenance. IRWD would conduct routine checks to clean any obstructions on the inlet and outlet structures, ensure that the wetland water levels meet the design criteria, and adjust riparian cell flashboard rises/weir structures.

The freshwater marsh would be irrigated to maintain open water depths of approximately 3 feet during the wet season. The open water area may be allowed to dry out during the dry season, similar to how the UC Ponds are managed and how other natural seasonal marshes function. The proposed diversion would occur only during the wet season. For riparian woodland, once riparian vegetation is established, habitat would be irrigated based on recommendations from the San Joaquin Marsh Operating Guidelines and Resource Management Plan (ESA 2021).

Habitat

The anticipated planting/habitat establishment period is three to five years. Maintenance during the establishment period would mostly include non-native plant control, irrigation system operation and maintenance, native plant care and replacement as needed, and erosion control and trash removal. Post-establishment long-term maintenance would occur less frequently than during the establishment period and mostly include periodic control of problematic non-native invasive species (that may volunteer in the mitigation site), erosion control and trash removal as needed, and site protection measures as needed.

Establishment Period

Maintenance activities during the establishment period would mostly include non-native plant control, native plant care and replacement as needed, and erosion control and trash removal. Native plant care would primarily include removing non-native species from planting basins, ensuring there is sufficient soil moisture, and addressing any harmful pests or diseases that may be detected. Non-native species can be divided between less problematic species that tend to diminish as native plant species establish and problematic invasive perennial species that can aggressively spread and out-compete native species if they are not controlled. Problematic invasive species are often defined as Moderate or High threats to California wildlands as listed by

California Invasive Plant Council and additional species that have been identified as problematic within a particular site or region. It is recommended that most non-native plant control be conducted by physical means including hand pulling and use of hand tools or organic (non-synthetic herbicides) before weed species flower and set seed. In some cases, when invasive perennial species become larger it is not feasible to remove enough of the root system to prevent resprouting, and organic herbicides (which do not translocate down into root systems) also cannot prevent resprouting. In those cases, a synthetic herbicide approved for aquatic use would likely be the best control option.

Long-Term Maintenance

The long-term management would be conducted by IRWD staff, or a qualified land management entity retained by IRWD. It is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized and mostly include periodic control of problematic non-native invasive species (that may volunteer in the mitigation site), erosion control and trash removal as needed, and site protection as needed.

2.5 Energy Consumption

The existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration. An electrical connection to an existing line along Campus Drive would be required for the temporary overhead spray system as part of the proposed SRIP Off-Site Mitigation.

Operational activities would not otherwise require the consumption of natural gas except for one weekly trip from the IRWD Operations Center to the site (3 miles roundtrip).

2.6 Proposed Approvals

Table 2 presents a preliminary list of the agencies and entities in addition to IRWD that would use this Addendum in their consideration of specific permits and other discretionary approvals that may apply to this SRIP Off-Site Mitigation:

**TABLE 2
REGULATORY PERMITS AND AUTHORIZATIONS**

Agency	Type of Approval	Needed for
California Regional Water Quality Control Board, Santa Ana Region	Construction General Permit	Construction-related stormwater discharges
Orange County Public Works	Encroachment	Work on levees
City of Irvine	Encroachment Permit	Construction activities within rights-of-way
UC Irvine	Encroachment Permit	Work on UC property

2.7 References

ESA, 2021. *San Joaquin Marsh Operating Guidelines and Resources Management Plan*. Prepared for Irvine Ranch Water District. April 2021.

ESA, 2023. *San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study*. Prepared for Irvine Ranch Water District. July 7, 2023.

Irvine Ranch Water District and University of California, 2020. Agreement Between University of California and Irvine Ranch Water District Concerning Diversion of Water Pursuant to Riparian Water Right. Executed March 2020.

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SECTION 3

Evaluation of Environmental Impacts

3.1 Aesthetics

<i>Issues (and Supporting Information Sources):</i>	Yes	No
I. AESTHETICS — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

a) Have a substantial adverse effect on a scenic vista?

The SRIP FEIR identified that the SRIP would require the use of construction equipment for a temporary period of 41 months and would not affect the scale or quality of locally designated scenic vistas/viewscales, including Loma Ridge, Santa Ana Mountains, and the San Joaquin Hills. The SRIP FEIR concluded that scenic vistas and viewscales in the project vicinity would not be substantially degraded, and impacts would be less than significant. Once the SRIP is built, the FEIR stated that a retaining wall would be installed that would introduce permanent features into a native landscape that is identified by the City of Irvine as a “major view,” resulting in implementation of Mitigation Measure AES-1 that would require design of the aboveground project structures to have color palettes that blend in with the surrounding character of the project site, reducing the impact to a less than significant level. Additionally, the SRIP FEIR identified that enlarged dam would extend higher than the natural ridgelines and could constitute a permanent impact to the viewscale of prominent ridgelines of Loma Ridge and the Santa Ana Mountains. The SRIP FEIR included revegetation of the dam face as a project design feature allowing for the enlarged dam to blend into the surrounding hillsides, which reduced the impact to a less than significant level.

The SRIP Off-Site Mitigation would be installed on land owned by IRWD in the San Joaquin Freshwater Marsh and is surrounded by vegetated areas on all sides. The City of Irvine identifies the intersection of University Drive and Culver Drive looking southwest, approximately one mile away from the SRIP Off-Site Mitigation, as a “major view” and University Drive where it crosses Campus Drive as a scenic highway of “rural or natural character” (City of Irvine 2015). The SRIP Off-Site Mitigation would include construction equipment involved in earthwork and installation of pipelines that would be similar in type to equipment analyzed in the SRIP FEIR. For a temporary period of time, the currently vegetated area would be excavated, and berms installed. Once constructed, there would be no aboveground facilities visible and once established, the vegetation and aquatic habitat would blend into the surrounding landscape such that no visual mitigation measures would be needed. In addition, the SRIP Off-Site Mitigation site is not visible from the intersection or roadway designated as scenic by the City of Irvine General Plan given the distance and intervening topography. The SRIP Off-Site Mitigation would result in less than significant impacts to a scenic vista and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to scenic vistas compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The SRIP FEIR identified that the SRIP was not located in the vicinity of a state designated or eligible scenic highway and therefore no impacts occurred. Similarly, the SRIP Off-Site Mitigation is not located near a listed or eligible state scenic highway. The nearest eligible highway is State Route 1 located approximately 3.5 miles southwest of the SRIP Off-Site Mitigation site (Caltrans 2023). The SRIP Off-Site Mitigation site currently contains a total of 2.75 acres of remnant willows, mixed black willows, and mule fat scrub. These riparian communities are in relatively poor condition due to displacement by exotic plants and poor natural hydrology. While these trees are considered a biological resource, they are not a scenic resource. The SRIP Off-Site Mitigation would protect the vegetation where possible and replace any displaced vegetation. The SRIP Off-Site Mitigation would result in no impacts to scenic resources within a scenic highway and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to scenic vistas compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

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

The SRIP FEIR identified that the project site and surrounding area has moderate to high visual quality but is not considered highly visually sensitive when affected viewers and viewer exposure

conditions are taken into account. The low contrasting visual elements of construction (i.e. equipment) would be temporary and would not permanently affect the existing visual character and quality of the surrounding area. To ensure that all permanent aboveground project structures would not impact the visual character or quality of the project site or surrounding area, the SRIP FEIR required Mitigation Measure AES-1 to design of the aboveground project structures to have color palettes that blend in with the surrounding character of the project site, resulting in a less than significant impact with implementation of mitigation.

The SRIP Off-Site Mitigation is located in the San Joaquin Freshwater Marsh and is surrounded by vegetated areas on all sides, providing moderate to high visual quality of public views of the site from vehicles, bicyclists and pedestrians traveling along Campus Drive. Similar to the SRIP, the SRIP Off-Site Mitigation would involve temporary use of construction equipment that would result in low contrasting visual elements into the landscape, as well as result in temporary earthmoving activity that would appear to contrast to the existing vegetated nature of the site. However, once the temporary construction phase is complete, the SRIP Off-Site Mitigation would involve planting of riparian vegetation and installation of aquatic features that would represent a visual improvement to the visual character of the site and its surroundings from existing condition. The SRIP Off-Site Mitigation would result in less than significant impacts to visual character and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to visual character during compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?

The SRIP FEIR required nighttime lighting for the treatment facilities and new access road that could affect nighttime views. As a result, Mitigation Measure AES-2 was required for new permanent exterior lighting to be shielded or directed downward to minimize light cast on neighborhood residences directly adjacent to the project site. Additionally, the SRIP EIR specified that when reservoir levels are at their peak in the winter and spring months, the reservoir could create new sources of glare from an increased water surface area. However, this potential increase would be marginal, not in effect in the summer months when daytime hours are at their highest, and only noticeable to motorists travelling on SR-133 for brief periods of time (several seconds). As a result, impacts to nighttime and daytime glare would be less than significant.

The SRIP Off-Site Mitigation would not involve nighttime construction or permanent aboveground facilities that would require nighttime lighting during operation. The SRIP Off-Site Mitigation would result in less than significant impacts to light or glare and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to nighttime lighting compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Aesthetics

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects with respect to aesthetics. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

Caltrans, 2023. California State Scenic Highway System Map. Available at <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca>. Accessed October 17, 2023.

City of Irvine, 2015. General Plan, Open Space and Conservation Element. Available at <https://webadmin.cityofirvine.org/civica/filebank/blobdload.asp?BlobID=20704>. Accessed October 17, 2023.

3.2 Agriculture and Forestry Resources

<i>Issues (and Supporting Information Sources):</i>	Yes	No
<p>II. AGRICULTURE AND FORESTRY RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:</p>		
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

The SRIP FEIR identified that the SRIP site was classified by the California Department of Conservation Farmland Map for Orange County as “Other Land,” which includes low density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry or aquatic facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. The SRIP FEIR indicated there is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance located within the project vicinity, therefore there would be no conversion of farmland and no impact would occur.

The CDC Farmland Map identifies the SRIP Off-Site Mitigation site as “Other Land” (CDC 2022) and would not be located on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The SRIP Off-Site Mitigation would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to conversion of farmland compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The SRIP FEIR identified that the SRIP site does not include land enrolled in a Williamson Act contract. However, the SRIP site is zoned as General Agriculture by the County of Orange. Pursuant to Section 7-9-55.1 of the Orange County Zoning Code, the General Agricultural District is intended to “provide for agriculture, outdoor recreational uses, and those low intensity uses which have a predominantly open space character”, such as the Syphon Reservoir. The SRIP FEIR identified that the site would not result in conflicts with the General Agricultural zoning designation as the SRIP site proposed similar uses, therefore no impact would occur.

The SRIP Off-Site Mitigation site does not include land enrolled in a Williamson Act contract (CDC 2004). The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine. Pursuant to Section 3-37-5 of the City of Irvine Zoning Code, the Preservation District is intended to “provide protection and maintenance of natural resources in a natural state with little or no modification.” The SRIP Off-Site Mitigation would include the establishment of a mix of riparian woodland and freshwater marsh habitat that would enhance the existing vegetation onsite. The SRIP Off-Site Mitigation would not involve a conflict with an agriculturally-zoned land use, and would further meet the intent of the existing Preservation zone by enhancing and maintaining the site’s natural habitat. The SRIP Off-Site Mitigation would not result in an impact to conflicts with agricultural zoning or a Williamson Act contract, and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to zoning compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The SRIP FEIR identified that the SRIP site is currently zoned General Agriculture and the SRIP would not include lands that are zoned as forest land or timberland. Additionally, the SRIP site does not involve any changes to the current General Plan land use or zoning designations for forest land, or timberland. Therefore, there would be no conversion of forest land, timberland, or cause rezoning of existing land uses and no impacts would occur.

The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine. Pursuant to Section 3-37-5 of the City of Irvine Zoning Code, the Preservation District is intended to “provide

protection and maintenance of natural resources in a natural state with little or no modification.” The SRIP Off-Site Mitigation would include the establishment of a mix of riparian woodland and freshwater marsh habitat that would enhance the existing vegetation onsite. The SRIP Off-Site Mitigation would not involve a conflict with an agriculturally-zoned land use, and would further meet the intent of the existing Preservation zone by enhancing and maintaining the site’s natural habitat. The SRIP Off-Site Mitigation would not result in an impact to conflicts with agricultural zoning or a Williamson Act contract, and no mitigation would be required. The SRIP Off-Site Mitigation would not cause rezoning of forest land, timberland, or existing zoning and no impact would occur. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to zoning compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

The SRIP FEIR identified that the SRIP site and surrounding areas contain no forest land. Therefore, implementation of the SRIP would result in no impacts related to the loss or conversion of forest land to non-forest use.

The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine and no forest land is observed in the surrounding areas. The SRIP Off-Site Mitigation would not cause a loss of forest land or conversion of forest land to non-forest use and as a result, no impacts would occur. The SRIP Off-Site Mitigation would result in similar impacts to the loss of forest land or conversion of forest land compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The SRIP FEIR identified that the SRIP site and surrounding areas would not convert Farmland to non-agricultural use or forest land to non-forest use. Therefore, implementation of the SRIP would result in no impacts related to the conversion of farmland to non-agricultural use or forest land to non-forest use.

The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine and no forest land is observed in the surrounding areas. The SRIP Off-Site Mitigation would not cause a loss of forest land or conversion of forest land to non-forest use. The SRIP Off-Site Mitigation would result in similar impacts to the loss of forest land or conversion of forest land compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Agricultural and Forestry Resources

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to agricultural and forestry resources. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

California Department of Conservation (CDC). 2004. Agricultural Preserves, Williamson Act Parcels, Orange County, California. 2004.

CDC, 2022. Available at: <https://maps.conservation.ca.gov/dlrp/ciff/>. Accessed, October 20, 2023.

3.3 Air Quality

<i>Issues (and Supporting Information Sources):</i>	Yes	No
III. AIR QUALITY —		
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Forecast assumptions by the Southern California Association of Governments SCAG forms the basis of the land use and transportation control portions of the Air Quality Management Plan (AQMP). Projects that are consistent with the regional population, housing, and employment forecasts identified by SCAG and which are generally consistent with land use designations in general plans from pertinent municipalities would not conflict with the AQMP growth projections. The SRIP FEIR identified that the SRIP would result in an increase in short-term employment compared to existing conditions from construction. However, construction jobs would be temporary and as such would not conflict with the long-term employment projections upon which the AQMP is based. Operation of the SRIP would not result in a change in land use, nor would it result in population, housing, or employment growth for the region.

The AQMP also includes control strategies applicable to short-term emissions from construction activities. The SRIP FEIR determined that the SRIP would be required to comply with the California Air Resources Board (CARB) Air Toxic Control Measure (ATCM) that limits heavy duty diesel motor vehicle idling to no more than five minutes at any given location with certain limited exceptions defined in the regulation for equipment in which idling is integral to the function of the equipment or activity (such as concrete trucks and concrete pouring). In addition, contractors would be required to comply with required and the CARB In-Use Off-Road Diesel Vehicle Regulation to use lower emitting equipment in accordance with the phased-in compliance schedule for equipment fleet operators. The SRIP is also required to comply with South Coast Air Quality Management District (SCAQMD) regulations for controlling fugitive dust pursuant to SCAQMD Rule 403. Compliance with these requirements would be consistent with and would not conflict with AQMP control strategies intended to reduce emissions from construction equipment and activities.

Nonetheless, as discussed in the Impact 3.2-2 of the SRIP FEIR, construction of the SRIP was found to exceed the significance threshold for NO_x. Therefore, impacts related to consistency with air quality plans during construction of the SRIP were found to be potentially significant. Construction-related daily emissions would be reduced to below the SCAQMD threshold of significance for NO_x with the implementation of Mitigation Measure AIR-1. Thus, with implementation of Mitigation Measure AIR-1, the SRIP would not conflict with the AQMP, and impacts were reduced to a less than significant level.

In December 2022, the SCAQMD adopted the 2022 AQMP, which builds upon measures and strategies already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emissions technologies, when cost-effective and feasible, and low NO_x technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard (SCAQMD 2022).

Similar to the SRIP, the SRIP Off-Site Mitigation would result in an increase in short-term employment compared to existing conditions from construction. Construction jobs would be temporary and as such would not conflict with the long-term employment projections upon which the AQMP is based. The SRIP Off-Site Mitigation site would involve the establishment of a mix of riparian woodland and freshwater marsh habitat and does not propose development that would introduce new permanent employees or residents to the area. The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine and does not involve rezoning. Additionally, the SRIP Off-Site Mitigation site currently supports some remnant native riparian vegetation that was originally planted in 1989 as part of a mitigation project called “Small Area Mitigation Site 1” (SAMS-1), in addition to patches of native scrub and chaparral shrubs mixed with co-dominant ruderal (weedy) vegetation. Since the proposed SRIP Off-Site Mitigation site has been previously used as a Mitigation site in 1989, the SRIP Off-Site Mitigation would continue to be used as a Mitigation site similar to existing conditions.

The SRIP Off-Site Mitigation would also be required to comply with the same emission control strategies as the SRIP, including the CARB ATCM that limits heavy duty diesel motor vehicle idling to no more than five minutes at any given location with certain limited exceptions defined in the regulation and the CARB In-Use Off-Road Diesel Vehicle Regulation to use lower emitting equipment in accordance with the phased-in compliance schedule for equipment fleet operators. The proposed SRIP Off-Site Mitigation is also required to comply with SCAQMD regulations for controlling fugitive dust pursuant to SCAQMD Rule 403 and would also implement Mitigation Measure AIR-1. Thus, the SRIP Off-Site Mitigation would not conflict with the 2022 AQMP and would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Mitigation Measures from the 2021 SRIP FEIR

AIR-1: IRWD shall require the construction contractor to implement construction equipment features for equipment operating at the project site during certain construction phases. Construction features will include the following: The proposed project shall utilize off-road diesel-powered construction equipment that meet or exceed CARB and USEPA Tier 4 off-road emissions standards for standard

construction equipment rated at 50 horsepower (hp) or greater during project construction. Such equipment will be outfitted with BACT devices including a CARB certified Level 3 Diesel Particulate Filter or equivalent. At a minimum, this measure shall apply during implementation of the following construction sub-phases: upstream excavation and foundation treatment, dam excavation and foundation treatment, installation of embankment to the bottom of the blanket drain, and installation of the chimney/remaining embankment.

b) Cumulatively considerable net increase of any criteria pollutant

The SRIP FEIR identified that the SRIP would generate air pollutant emissions from vehicle trips generated by construction workers, vendor trucks, and haul trucks traveling to and from the SRIP site and the use of construction equipment. Operation of the SRIP would not result in new or increased use of motor vehicles, aside from periodic maintenance vehicles. Air pollutant emissions were quantified using the California Emissions Estimator Model (CalEEMod) for off-road equipment and the On-Road Mobile Source Emissions Factors (EMFAC) model for on-road vehicles. The maximum daily construction emissions for the SRIP were estimated for each construction phase. Some individual construction phases could potentially overlap; therefore, the estimated maximum daily emissions include these potential overlaps by combining the relevant construction phase emissions. As indicated in the SRIP FEIR, construction-related daily emissions were found to exceed the SCAQMD threshold of significance for NO_x. For all other criteria pollutants, emission levels would be below the applicable thresholds of significance. As the SRIP maximum regional emissions from construction would exceed the regional threshold of significance for NO_x, regional construction emissions impacts were found to be potentially significant. Construction-related daily emissions were reduced to below the SCAQMD threshold of significance for NO_x with the implementation of Mitigation Measure AIR-1. Thus, the SRIP regional construction emissions impacts were mitigated to less than significant.

Annual emissions were compared to the General Conformity *de minimis* levels for the National Ambient Air Quality Standard (NAAQS) non-attainment areas. In the unmitigated scenario, annual construction emissions of NO_x, were found to exceed the applicable 10 tons per year General Conformity threshold. With implementation of Mitigation Measure AIR-1, annual construction emissions were found to be below applicable General Conformity *de minimis* levels and thus would not conflict with implementation of the State Implementation Plan (SIP). Therefore, no further conformity analysis is required for any of the pollutants because their emissions would be less than the conformity *de minimis* levels, and no significant adverse effect from the SRIP would occur.

During SRIP operations, no new permanent vehicle trips were found to occur as maintenance and recreational activities are anticipated to remain the same as the existing conditions. Operational regional criteria pollutant emissions were found to not exceed 1 pound per day for all criteria pollutants during operational activities. The SRIP operational-related daily emissions were found to not exceed the SCAQMD thresholds of significance for any criteria pollutants and regional operation-related emissions impacts were less than significant. Annual emissions would be less than 0.2 tons per year, well below any of the applicable General Conformity *de minimis* thresholds. Therefore, no further conformity analysis was required for any of the pollutants

because their emissions would be less than the conformity *de minimis* levels and no significant adverse effect from SRIP operations would occur.

The SRIP Off-Site Mitigation would be installed on land owned by IRWD in the San Joaquin Freshwater Marsh and is surrounded by vegetated areas on all sides. Construction of the SRIP Off-Site Mitigation would last for up to approximately 22 months, with the last approximately 15 months for minimally intensive site vegetation planting activities. Construction would occur at the same time as the SRIP and would include site preparation, grading of channels and berms, installation of irrigation infrastructure, and site vegetation planting. Similar to the SRIP, the SRIP Off-Site Mitigation would require the use of heavy-duty construction equipment, haul trucks, and worker vehicles. Construction equipment required for site preparation would include a mower, loader, truck, and dozer. Approximately 30 to 50 haul truck trips (15 to 25 inbound trips and 15 to 25 outbound trips) per day would be required over the one-month site preparation phase with approximately 5 workers per day. Construction equipment required for grading of the channels and berms would include compactors, excavators, graders, trucks, scrapers, tractors/loaders/backhoes, and dozers. Up to approximately 120 haul truck trips (60 inbound trips and 60 outbound trips) per day would be required over the three-month site grading phase with approximately 14 workers per day. Construction of the irrigation infrastructure would require concrete/industrial saws, jack hammers, hydraulic hammers, skidders/dozers, excavators, backhoes, loaders, trenchers, pumps, trucks, hoppers, rollers/compactors, and compactors. Up to approximately 8 haul truck trips (4 inbound trips and 4 outbound trips) would be required per day over the three-month duration with approximately 6 to 12 workers per day. Site vegetation planting would require the use of trucks and hand equipment. The SRIP Off-Site Mitigation could require plants and other materials to be transported to the site resulting in approximately 90 total truck trips to/from the site. The number of truck trips on any given day would be minimal and expected to be less than 5 on any given day. A total of up to 6 to 20 workers would be needed per day for construction activities associated with site vegetation planting.

The SRIP Off-Site Mitigation would require the use of generally similar types of construction equipment as the SRIP. However, the duration and associated construction electricity and transportation fuel demand would be required over a much shorter duration than the SRIP. As stated above, approximately seven months would be needed for site preparation, grading of channels and berms, and installation of irrigation infrastructure, while the last 15 months would be needed for site vegetation planting, which would not require heavy-duty equipment and would not generate substantial construction emissions. The pipeline installation could overlap other phases of construction. Construction equipment and trucks would be required to comply with applicable provisions of regulations to improve fuel efficiency, including the Phase 1 and Phase 2 heavy-duty truck standards. Furthermore, trucks would need to comply with the CARB ATCM to limit heavy-duty diesel motor vehicle idling to 5 minutes or less at any given location.

Emissions from construction of the SRIP Off-Site Mitigation were estimated using the CalEEMod for off-road equipment and the On-Road Mobile Source Emissions Factors (EMFAC) model for on-road vehicles. Maximum daily emissions from the SRIP Off-Site Mitigation with implementation of Mitigation Measure AIR-1 are added to the maximum mitigated daily emissions in the SRIP FEIR and compared to the SCAQMD significance thresholds in the SRIP

FEIR. **Table 3** shows the maximum daily emissions from the SRIP and the SRIP Off-Site Mitigation. The SRIP FEIR included maximum daily emissions from additional geotechnical investigations (i.e., borings, test pits, or trenches). The geotechnical investigations have been completed and, thus, would not overlap with the maximum daily emissions from the SRIP Off-Site Mitigation. Therefore, the maximum daily emissions from additional geotechnical investigations in the SRIP FEIR are not included in the analysis for the SRIP Off-Site Mitigation. As shown, maximum daily emissions would not exceed the significance threshold. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

TABLE 3
ESTIMATED MAXIMUM MITIGATED REGIONAL CONSTRUCTION EMISSIONS – SRIP AND SRIP OFF-SITE MITIGATION (POUNDS PER DAY)

Construction Sub-Phase	VOC	NO _x	CO	SO ₂	PM10 ^a	PM2.5 ^a
SRIP FEIR (pounds/day)^b						
Maximum Daily Emissions (Excluding Geotechnical): Dam Excavation & Construction of Dam (Install Inlet/Outlet)	7	72	144	<1	17	8
SRIP Off-Site Mitigation (pounds/day)^b						
Site Preparation (2025)	<1	6.4	18.7	<1	3.7	1.7
Grading of Channels and Berms (2025)	<1	14.3	35.7	<1	6.0	2.3
Installation of Irrigation Infrastructure (2025)	<1	7.0	15.1	<1	<1	<1
Installation of Irrigation Infrastructure (2026)	<1	6.9	15.1	<1	<1	<1
Site Vegetation Planting (2026)	<1	<1	2.2	<1	<1	<1
Site Vegetation Planting (2027)	<1	<1	2.1	<1	<1	<1
Overlapping Subphases						
Grading of Channels and Berms and Installation of Irrigation Infrastructure	<1	14.6	37.8	<1	6.5	2.4
Installation of Irrigation Infrastructure and Site Vegetation Planting	1.4	21.3	50.9	<1	6.6	2.5
Maximum Daily Emissions (SRIP and SRIP Off-Site Mitigation)	8.4	93.3	194.9	<1	23.6	10.5
SCAQMD Thresholds of Significance	75	100	550	150	150	55
Exceeds Thresholds?	No	No	No	No	No	No

NOTES:

Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided **Appendix B** of this Addendum.

^a Emissions include fugitive dust control measures consistent with SCAQMD Rule 403, including subsection (e) – Additional Requirements for Large Operations.

^b Incorporates Mitigation Measure AIR-1.

SOURCE: ESA 2021; 2023.

Annual emissions for mitigated emissions were compared to the General Conformity *de minimis* levels for NAAQS non-attainment areas. **Table 4** provides the annual construction emissions. With implementation of Mitigation Measure AIR-1, annual construction emissions would be below applicable General Conformity *de minimis* levels and thus would not conflict with implementation of

the SIP. Additionally, short-term direct construction emissions associated with the SRIP Off-Site Mitigation would not conflict with or obstruct implementation of applicable long-term air quality management plans. Therefore, no further conformity analysis is required for any of the pollutants because their emissions would be less than the conformity *de minimis* levels. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

**TABLE 4
GENERAL CONFORMITY – SRIP AND SRIP OFF-SITE MITIGATION**

Year	VOC	NO _x	CO	PM10 ^a	PM2.5 ^a
SRIP FEIR (tons/year)^b					
2022	<1	1	3	<1	<1
2023	1	5	13	1	1
2024	<1	7	12	2	1
2025	<1	3	7	1	<1
2026	<1	1	1	<1	<1
SRIP Off-Site Mitigation (tons/year)^b					
2025	<1	<1	1.6	<1	<1
2026	<1	<1	<1	<1	<1
2027	<1	<1	<1	<1	<1
Maximum Annual Emissions (SRIP and SRIP Off-Site Mitigation)	1	7	13	2	1
De Minimis Levels	10	10	100	100	70
Exceeds <i>de minimis</i> ?	No	No	No	No	No

NOTES:

Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in **Appendix B** of this Addendum.

^a Emissions include fugitive dust control measures consistent with SCAQMD Rule 403, including subsection (e) – Additional Requirements for Large Operations.

^b Incorporates Mitigation Measure AIR-1.

SOURCE: ESA 2021; 2023.

Operation of the SRIP Off-Site Mitigation would require annual inspections, routine checks of the water supply pipeline, irrigation of the freshwater marsh, plant care and replacement as needed, and other maintenance such as erosion control and trash removal. It is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Off-Site Mitigation would not generate substantial numbers of vehicle trips. Furthermore, the existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration. Operational emissions from the SRIP Off-Site Mitigation would be similar to the SRIP. Thus, operational regional criteria pollutant emissions for the SRIP Off-Site Mitigation would not exceed 1 pound per day for all criteria pollutants during operational activities. The SRIP Off-Site Mitigation operational-related daily emissions would not exceed the SCAQMD thresholds of

significance for any criteria pollutants. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Annual operational emissions of the SRIP Off-Site Mitigation would be less than 0.2 tons per year, and would therefore be well below any of the *de minimis* levels, thus in conformance with the SIPs. Additionally, operational emissions would not conflict with or obstruct implementation of applicable long-term air quality management plans. Therefore, no further conformity analysis is required for any of the pollutants because their emissions would be less than the conformity thresholds and no significant adverse effect from the SRIP Off-Site Mitigation would occur.

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to air pollutant emissions and no additional mitigation beyond SRIP FEIR Mitigation Measure AIR-1 would be required. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Expose sensitive receptors to substantial pollutant concentrations

The SRIP FEIR identified that construction of the SRIP would result in maximum localized construction emissions that would exceed the localized significance threshold for NO_x and impacts to sensitive receptors would be potentially significant. All other criteria pollutants of local concern (CO, PM₁₀, and PM_{2.5}) would not exceed the localized significance thresholds. Construction-related emissions would be reduced to below the SCAQMD localized significance threshold for NO_x with the implementation of Mitigation Measure AIR-1. As the SRIP FEIR maximum localized emissions from construction were found to be reduced to below the localized significance threshold, localized construction emissions impacts would be less than significant with the incorporation of Mitigation Measure AIR-1.

The SRIP FEIR identified that construction of the SRIP would result in a significant impact for lifetime cancer risk in excess of the SCAQMD significance threshold for toxic air contaminant (TAC) emissions of an incremental cancer risk greater than 10 in one million for any receptor. Implementation of Mitigation Measure AIR-1 would reduce diesel particulate matter (DPM) emissions from SRIP construction activities. The estimated incremental cancer risk for SRIP construction activities with implementation of Mitigation Measure AIR-1 would be between 1.43 per million and 3.44 per million depending on the level at which the mitigation is implemented, which would be well below the significance threshold of 10 in one million. TAC impacts would be less than significant with the incorporation of Mitigation Measure AIR-1. Both unmitigated and mitigated non-carcinogenic health risk impacts of the SRIP would be below the significance threshold of a chronic Hazard Index (HI) of 1.0 for the maximum impacted receptor. Therefore, the SRIP FEIR found this impact to be less than significant.

The SRIP FEIR identified that operation of the SRIP would result in maximum daily localized emissions that would not exceed 1 pound per day and therefore would not exceed localized significance thresholds. As the SRIP maximum localized operational emissions would not exceed the localized thresholds of significance for NO_x, CO, PM₁₀, or PM_{2.5}, operational emissions impacts to sensitive receptors would be less than significant.

The nearest air quality sensitive uses to the SRIP Off-Site Mitigation site are student dormitories associated with the University of California, Irvine approximately 700 feet to the southeast of the site. Construction of the SRIP Off-Site Mitigation would result in maximum localized construction emissions that would not exceed the localized significance threshold for NO_x, CO, PM₁₀, and PM_{2.5} with the implementation of Mitigation Measure AIR-1. **Table 5** shows the maximum daily localized emissions from the SRIP Off-Site Mitigation. As shown, maximum daily localized emissions would not exceed the significance threshold with implementation of Mitigation Measure AIR-1. In addition, the SRIP Off-Site Mitigation is located more than seven miles from the SRIP; thus, due to the substantial separation distance, localized emissions from the SRIP Off-Site Mitigation would not combine with the SRIP and result in adverse impacts at the same sensitive receptors. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

TABLE 5
ESTIMATED MAXIMUM MITIGATED LOCALIZED CONSTRUCTION EMISSIONS –SRIP OFF-SITE MITIGATION
(POUNDS PER DAY)

Construction Phase	NO _x	CO	PM ₁₀ ^a	PM _{2.5} ^a
SRIP Off-Site Mitigation (pounds/day)^b				
Site Preparation (2025)	2.1	16.3	2.6	1.4
Grading of Channels and Berms (2025)	<1	<1	<1	<1
Installation of Irrigation Infrastructure (2025)	<1	<1	<1	<1
Installation of Irrigation Infrastructure (2026)	3.6	29.8	3.3	1.5
Site Vegetation Planting (2026)	5.9	13.5	<1	<1
Site Vegetation Planting (2027)	5.9	13.5	<1	<1
Overlapping Subphases				
Grading of Channels and Berms and Installation of Irrigation Infrastructure	3.6	29.8	3.3	1.5
Installation of Irrigation Infrastructure and Site Vegetation Planting	9.5	43.3	3.4	1.6
SRIP Off-Site Mitigation Maximum Localized (On-Site) Emissions	9.5	43.3	3.4	1.6
SCAQMD Thresholds of Significance^c	223	3,888	85	35
Exceed Thresholds?	No	No	No	No

NOTES:

Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in **Appendix B** of this Addendum.

^a Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

^b Incorporates Mitigation Measure AIR-1.

^c Based on the LSTs for 5 acres, Source Receptor Area 20 (Central Orange County Coastal), and a conservative receptor distance of 200 meters (just under 700 feet) from the site.

SOURCE: ESA 2021; 2023.

Similar to the SRIP, operation of the SRIP Off-Site Mitigation would result in maximum daily localized emissions that would not exceed 1 pound per day and therefore would not exceed localized significance thresholds. As the SRIP Off-Site Mitigation maximum localized operational emissions would not exceed the localized thresholds of significance for NO_x, CO, PM₁₀, or PM_{2.5}, operational emissions impacts to sensitive receptors would be less than

significant. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Other emissions (such as those leading to odors) adversely affecting a substantial number of people

The SRIP FEIR identified that the SRIP may emit other emissions such as odors during construction. The SRIP would comply with the applicable provisions of SCAQMD Rule 1113, which limits the amount of odor-causing VOC emissions in architectural coatings and solvents. In addition, the SRIP would comply with the applicable provisions of the CARB Air Toxics Control Measure regarding idling limitations for diesel trucks. Furthermore, construction emissions for the SRIP would not exceed the SCAQMD regional significance thresholds for attainment, maintenance, or unclassifiable criteria air pollutants (i.e., CO and SO₂). Therefore, SRIP construction activities were found to result in less than significant impacts with respect to other emissions, including those leading to odors.

Operation of the SRIP would not include land uses associated with odor complaints, which, according to the SCAQMD *CEQA Air Quality Handbook*, typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Furthermore, operational emissions would not exceed the SCAQMD regional significance thresholds for attainment, maintenance, or unclassifiable criteria air pollutants (i.e., CO and SO₂). Therefore, operation of the SRIP would result in less than significant impacts with respect to other emissions, including those leading to odors.

Similar to the SRIP, the SRIP Off-Site Mitigation may emit other emissions such as odors during construction. The SRIP Off-Site Mitigation would comply with the applicable provisions of the CARB Air Toxics Control Measure regarding idling limitations for diesel trucks. The SRIP Off-Site Mitigation would not require architectural coatings or solvents. Furthermore, as shown in **Table 3**, construction emissions for the SRIP Off-Site Mitigation would not exceed the SCAQMD regional significance thresholds for attainment, maintenance, or unclassifiable criteria air pollutants (i.e., CO and SO₂). Therefore, SRIP construction activities would result in less than significant impacts with respect to other emissions, including those leading to odors. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Similar to the SRIP, operation of the SRIP Off-Site Mitigation would not include land uses associated with odor complaints, which typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Furthermore, operational emissions would not exceed the SCAQMD regional significance thresholds for attainment, maintenance, or unclassifiable criteria air pollutants (i.e., CO and SO₂). Therefore, operation of the SRIP would result in less than significant impacts with respect to other emissions, including those leading to odors. Thus, the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Air Quality

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to air quality. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

South Coast Air Quality Management District (SCAQMD), 1993. *CEQA Air Quality Handbook*. November.

SCAQMD, 2022. Final 2022 AQMP, December 2022. Available at <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16>. Accessed November 20, 2023.

3.4 Biological Resources

Issues (and Supporting Information Sources):	Yes	No Impact
IV. BIOLOGICAL RESOURCES — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

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

Special-Status Plants

The SRIP FEIR noted that four special-status plant species, Catalina mariposa lily (CRPR 4.2, NCCP/HCP Covered), intermediate mariposa lily (CRPR 1B.2), multi-stemmed dudleya (CRPR 1B.2), and San Diego County viguiera (CRPR 4.3), were observed during focused surveys of the project site in 2018 and 2019. The SRIP was found to avoid removal or damage to any specimens of intermediate mariposa lily, multi-stemmed dudleya, and San Diego County viguiera.

Therefore, the SRIP would not impact these special-status plant species, and no mitigation is required. The SRIP was also found to avoid more than 90 percent of the Catalina mariposa lily specimens on-site, and would remove approximately 24 of the total 309 Catalina mariposa lily individuals during construction. This loss was determined not to threaten the existence of the on-site population and would not be significant. Moreover, Catalina mariposa lily is a covered species under the NCCP/HCP provided that the SRIP complies with the NCCP/HCP provisions,

and thus this species is considered conserved since the NCCP/HCP Reserve provides for the regional conservation for this and other covered species. Therefore, impacts to Catalina mariposa lily were found to be less than significant.

Several special status plants are known to occur in natural habitat areas in the near vicinity of the SRIP Off-Site Mitigation, but no special-status plants are known or expected to be present within the maximum work area limits of the off-site mitigation area due to lack of suitable habitat and extensive disturbance. The SRIP Off-Site Mitigation would therefore result in no impacts to special status plant species and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to special-status plant species compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Special-Status Wildlife

The SRIP FEIR found that the SRIP would permanently remove a total of up to approximately 28.5 acres of coastal sage scrub communities and would temporarily impact another 0.85. Implementation of Mitigation Measures BIO-1 requires IRWD to spend some of its allotted Incidental Take Credits for coastal sage scrub impacts (as a participating landowner) in accordance with NCCP/HCP stipulations. Mitigation Measure BIO-1 also requires additional on and/or off-site creation, restoration, and/or enhancement of areas containing natural communities suitable for special-status species and also mandates off-site land acquisition, preservation, creation, restoration, and/or enhancement of natural communities suitable for special-status species. Finally, BIO-1 requires that areas subject to temporary impacts be returned to pre-project conditions (i.e., pre-project elevation contours and revegetated with native upland scrub species) and stipulates planning and monitoring to achieve that objective. Thus, Mitigation BIO-1 addresses all potential impacts involving loss or displacement of habitat for special status species. Therefore BIO-1, along with BIO-2, and BIO-3, which are designed to avoid or minimize potential direct impacts to special status species, would reduce impacts to a less than significant level.

The least Bell's vireo is listed as a federal and state Endangered species but is a Conditionally Covered species under the NCCP/HCP. This species is found in riparian habitat, and 17 least Bell's vireo individuals and/or territories were observed on the SRIP site in 2019. The Wildlife Agencies indicated that the NCCP/HCP conditional coverage would apply for the SRIP's impacts to least Bell's vireo (subject to implementation of adequate mitigation). The SRIP would displace approximately 6.41 acres of woody riparian communities but would also create woody riparian habitat that would provide replacement nesting habitat for the least Bell's vireo. The new riparian habitat areas would be maintained with supplemental irrigation and would not depend on whether the reservoir is full or nearly full to be sustained. Woody riparian habitat around the reservoir perimeter, once established, will provide both foraging and nesting opportunities that would benefit least Bell's vireo and other species. Nevertheless, there would be a temporary habitat loss until construction is completed and riparian habitat can be re-established that the species can use again. This temporary loss was found to be potentially significant in terms of the temporary

reduction to the amount of habitat available in the local region. Implementation of Mitigation Measure BIO-1 requires on and/or off-site creation, restoration, and/or enhancement of areas containing natural communities suitable for special-status species and also mandates off-site land acquisition, preservation, creation, restoration, and/or enhancement of natural communities suitable for special-status species. In fact, the SRIP Off-Site Mitigation has been developed to fulfill these requirements of Mitigation Measure BIO-1 to the extent that the on-site riparian habitat mitigation (at the Syphon Reservoir site) will not compensate for permanent and temporal impacts to that habitat and the species that use it, particularly least Bell's vireo. Therefore BIO-1, along with BIO-2 and BIO-3, which are designed to avoid or minimize potential direct impacts to special status species, would reduce impacts to a less than significant level.

For the yellow warbler and yellow-breasted chat, which utilize woody riparian habitat similar to the least Bell's vireo, several of each species were observed on-site in 2019. Although the SRIP FEIR found that there would ultimately be no net loss of riparian habitat for the yellow warbler and yellow-breasted chat with the creation of riparian habitat areas on the SRIP project site, the temporal loss of habitat for yellow warbler and yellow-breasted chat were found to potentially be considered significant as it would reduce the amount of available habitat for these species in the local region until an equivalent habitat area is reestablished. Implementation of Mitigation Measure BIO 1, which will include on-site riparian habitat creation at the Syphon Reservoir and also the riparian habitat to be established via the SRIP Off-Site Mitigation, along with BIO-2 and BIO-3, would reduce impacts to a less than significant level.

The SRIP FEIR found that direct impacts to avian species during the non-breeding season would not be potentially significant as these species are mobile and would be expected to fly away from the construction area, if present. However, if construction and maintenance work cannot be scheduled outside of nesting season, impacts to nesting special-status bird species would be potentially significant. Implementation of Mitigation Measure BIO-3 was found to reduce impacts to a less than significant level.

As detailed in **Appendix C**, *Biological Resources Technical Memorandum – SRIP Off-Site Mitigation Project*, the SRIP Off-Site Mitigation site does not occur in or near any designated Critical Habitat for any federally-listed species. Also, most of the SRIP Off-Site Mitigation site is occupied by ruderal habitat that provides relatively low value to wildlife, including special status species. The SRIP Off-Site Mitigation would establish more than 16 acres of woody riparian vegetation along with more than 12 acres of tule marsh wetlands and open water habitat. The SRIP Off-Site Mitigation would also establish up to 2.2 acres of new coastal sage scrub vegetation along the completed berm slopes within the property and will preserve and could potentially include enhancement of existing coastal sage scrub on the slopes adjacent to Campus Dr. and the levee. Furthermore, some small patches of existing riparian scrub may be protected in place during clearing and grubbing of the site, and creating the main drainage swales, if practical.

Nevertheless, most of the existing riparian woodland and riparian scrub habitat, which provides at least marginally suitable habitat for the special status least Bell's vireo and yellow-breasted chat, and at least half of the existing coastal sage scrub habitat that provides potentially suitable habitat for coastal California gnatcatcher, will be removed as the result of clearing and grading to create

the new habitat areas. In addition, the clearing and grading of the site to create the new base and drainage pattern for the riparian and wetland habitat areas and to complete the berms to contain the habitat on the northeast and northwest sides, could result in impacts to southwestern pond turtle that may venture on-site prior to or during construction.

The SRIP Off-Site Mitigation is planned to establish much higher quality habitat and will provide substantially greater acreage that will provide a net benefit to these and other species but the impact of displacing existing habitat, albeit of lower value, must still be acknowledged. The temporary loss of marginally suitable habitat of declining value for these special status species is substantially offset by replacement with higher value habitat that will be conserved and managed in perpetuity by IRWD. In addition, white-tailed kite, least Bell's vireo, and coastal California gnatcatcher are Covered or Conditionally Covered species under the NCCP/HCP. Therefore, since IRWD is a signatory to the NCCP/HCP and both the SRIP and the SRIP Off-Site Mitigation must follow the applicable guidelines of the NCCP/HCP, any take of these species, including take of habitat, is covered by the NCCP/HCP. However, since the SRIP Off-Site Mitigation could result in direct impacts to special status wildlife during construction, if present, Mitigation Measure BIO-2 and BIO-3 from the SRIP FEIR will also be implemented for the SRIP Off-Site Mitigation to provide precautions and seasonal restrictions to avoid or minimize such effects. In addition, to avoid potential impacts to southwestern pond turtle, which is not covered under the NCCP/HCP, the SRIP Off-Site Mitigation will require installation of silt fencing around the site perimeter (particularly on the west and northwest sides adjacent to the marsh) prior to site disturbance and to regularly inspect and maintain the fencing to prevent any turtles from wandering into the active construction area.

The SRIP Off-Site Mitigation will comply with the NCCP/HCP as required, since IRWD is a signatory participating agency. Furthermore, Mitigation Measure BIO-2 and MM BIO-3 will be implemented on the SRIP Off-Site Mitigation as also specified for the SRIP. Finally, the project design feature requiring set up, weekly inspection and maintenance of pond turtle exclusion fencing will be enforced during implementation. Based on these considerations, the potential for the SRIP Off-Site Mitigation to have a substantial adverse effect on special-status species would be less than significant with mitigation implementation. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to special-status wildlife species compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

As discussed below under Item c), there would be no substantial impact to riparian habitat within San Diego Creek downstream from the intake pump (next to the Michelson Water Reclamation Facility) due to seasonal drawdown to supply the SRIP Off-Site Mitigation, thus no special-status species associated with that riparian habitat in the Creek would be affected.

Mitigation Measures from the 2021 SRIP FEIR

BIO-2: In accordance with the NCCP/HCP, certain construction-related mitigation measures are required to minimize impacts to the coastal California gnatcatcher and other coastal sage scrub species. The removal of coastal sage scrub communities will

be conducted in compliance with the NCCP/HCP's Construction Related Minimization Measures:

- a. To the maximum extent practicable, no grading of coastal sage scrub habitat that is occupied by nesting gnatcatchers will occur during the breeding season (February 15 through July 15).
- b. Prior to the commencement of grading operations or other activities involving significant soil disturbance, all areas of coastal sage scrub habitat to be avoided under the provisions of the NCCP/HCP shall be identified with temporary fencing or other markers clearly visible to construction personnel. Additionally, prior to the commencement of grading operations or other activities involving disturbance of coastal sage scrub, a survey will be conducted to locate gnatcatchers and cactus wrens within 100 feet of the outer extent of projected soil disturbance activities and the locations of any such species shall be clearly marked and identified on the construction/grading plans.
- c. A monitoring biologist, acceptable to USFWS/CDFW, will be on-site during any clearing of coastal sage scrub. IRWD will advise USFWS/CDFW at least seven calendar days (and preferably fourteen calendar days) prior to the clearing of any habitat occupied by Identified Species² to allow USFWS/CDFW to work with the monitoring biologist in connection with bird flushing/capture activities. The monitoring biologist will flush Identified Species (avian or other mobile Identified Species) from occupied habitat areas immediately prior to brush-clearing and earth-moving activities. If birds cannot be flushed, they will be captured in mist nets, if feasible, and relocated to areas of the site to be protected or to the NCCP/HCP Reserve System. It will be the responsibility of the monitoring biologist to assure that Identified bird species will not be directly impacted by brush-clearing and earth-moving equipment in a manner that also allows for construction activities on a timely basis.
- d. Following the completion of initial grading/earth moving activities, all areas of coastal sage scrub habitat to be avoided by construction equipment and personnel will be marked with temporary fencing and other appropriate markers clearly visible to construction personnel. No construction access, parking, or storage of equipment or materials will be permitted within such marked areas.
- e. In areas bordering the NCCP Reserve System or Special Linkage/Special Management areas containing significant coastal sage scrub identified in the NCCP/HCP for protection, vehicle/equipment transportation routes and staging areas will be restricted to a minimum number during construction consistent with project construction requirements. Waste dirt or rubble will not be deposited on adjacent coastal sage scrub identified in the NCCP/HCP for protection. Pre-construction meetings involving the monitoring biologist, construction supervisors, and equipment operators will be conducted and documented to ensure maximum practicable adherence to these measures.

² NCCP/HCP Identified Species that occur, or have potential to occur, on-site include the following: coastal California gnatcatcher, coastal cactus wren, orange-throated whiptail, coastal western whiptail, red-diamond rattlesnake, coast horned lizard, northern harrier, sharp-shinned hawk, prairie falcon, American peregrine falcon, red-shouldered hawk, southern California rufous-crowned sparrow, San Diego desert woodrat, gray fox, and coyote.

- f. Coastal sage scrub identified in the NCCP/HCP for protection and located within the likely dust drift radius of construction areas shall be periodically sprayed with water to reduce accumulated dust on the leaves as recommended by the monitoring biologist.

BIO-3: Impacts to nesting birds would be avoided by conducting all clearing and grubbing outside of the bird nesting season (i.e., work should occur September 1 to February 14, or July 1 to January 14 for raptors). If clearing and grubbing cannot avoid the bird nesting season, the following measures would be implemented:

- a. Prior to work during the bird nesting season (February 15 to August 31, or January 15 to June 31 for raptors), a qualified biologist should conduct a pre-construction survey of all suitable habitat for the presence of nesting birds no more than 7 days prior to construction and/or maintenance activities. The results of the pre-construction survey would be valid for 7 days; if vegetation removal activities do not commence within 7 days following the survey, a new pre-construction nesting bird survey should be conducted before these activities begin again. If no active nests are found, then no further mitigation is required.
- b. If any active nests are found during a pre-construction nesting bird survey, a buffer of 300 feet (500 feet for raptors), or as determined appropriate by the qualified biologist (based on species-specific tolerances and site-specific conditions) in consultation with IRWD, would be delineated, flagged, and avoided until the nesting cycle is complete (i.e., the qualified biologist determines that the young have fledged or the nest has failed). The qualified biologist may also recommend other measures to minimize disturbances to the nest, which may include, but are not limited to, erection of sound barriers (e.g., noise blankets), erection of visual barriers (e.g., hay bales), or full-time monitoring by a qualified biologist.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The SRIP FEIR found that the SRIP would permanently impact up to 61.68 of sensitive natural communities, including 0.09 acre of arroyo willow thicket, 4.07 acres of black willow thicket, 0.77 acre of coyote brush scrub, 0.19 acre of chaparral bushmallow scrub, 0.06 acre of chaparral bushmallow scrub/non-native herbaceous cover, up to 27.34 acres of California sagebrush scrub, 0.98 acre of California sagebrush scrub/non-native herbaceous cover, and 28.18 acres of non-native herbaceous cover/California sagebrush scrub. The SRIP would temporarily impact 0.85 acre of California sagebrush scrub. Impacts to sensitive natural communities that would result from the SRIP were found to be potentially significant. Implementation of Mitigation Measure BIO-6 was required to reduce impacts to a less than significant level.

In addition, a large portion of the SRIP site contains riparian and freshwater marsh habitat as well as the open water associated with the existing reservoir, which are all considered to be subject to CDFW jurisdiction, which includes lakes, streams, and associated vegetation. The SRIP was found to temporarily impact 26.35 acres of CDFW jurisdictional lakes, streams, and associated vegetation, of which 0.05 acre would be considered a beneficial impact (i.e., the areas will be impacted to create riparian woodland or freshwater marsh habitat). The SRIP would also create at least 6.58 acres of on-site riparian woodland and approximately 5.88 acres of additional on-site

woody riparian and/or freshwater marsh habitat and enlarge the reservoir, which would expand the open water resources on-site. Thus, the SRIP was found to result in a beneficial impact, which would increase the amount of CDFW jurisdictional riparian habitat, and impacts were found to be less than significant. Because the SRIP was found to be altering a substantial area subject to CDFW jurisdiction, the SRIP was required to comply with Mitigation Measure BIO-7 to obtain a Streambed Alteration Agreement from CDFW. Maintenance of the created riparian/wetland habitat areas, which include creation of sensitive riparian communities that include riparian habitat subject to CDFW regulatory jurisdiction, would be required for up to 5 years after construction is complete for the proposed habitat areas to meet success criteria and provide good quality wildlife habitat. Re-establishing an equivalent or greater area of such habitat would be considered to have a beneficial impact as it would result in no net loss of CDFW jurisdictional area.

The SRIP Off-Site Mitigation would displace patches of remnant black willow and mule fat riparian scrub habitat amounting to a total of 2.75 acres in the central portion of the site, unless some patch areas may be avoided during grading and grubbing, which may not be practical. Although this habitat on-site is in a degraded condition and appears to continue to be declining in health and vigor, these patches of vegetation are still considered to represent sensitive habitat. In addition, the SRIP Off-Site Mitigation will result in the removal of up to approximately 1.8 acres of sensitive upland scrub habitat where it occurs in the central and southeastern part of the site. This habitat would be preserved where it occurs on the slope along Campus Drive and along the levee, since the slope areas are not proposed to be grubbed or graded except where the proposed water supply pipeline would enter and discharge into the site. Finally, the patches of alkali heath that amount to approximately 0.39-acre in the aggregate in the southwestern part of the site are expected to be removed by grubbing and grading. Some patches of alkali heath may be preserved where they will not interfere with establishing the requisite drainage pattern for the riparian woodland habitat.

The SRIP Off-Site Mitigation is planned to establish much higher quality habitat than the existing vegetation over the entire site to provide net benefits to wildlife and improve other functions and values. Nevertheless, the impact of displacing existing habitat, albeit of lower value, must still be acknowledged and addressed.

As it is intended to provide off-site mitigation for the SRIP, the acreage of riparian vegetation and wetland habitats that are designated to compensate for SRIP impacts cannot be identified as offsets for the displacement of the existing habitat that may be considered sensitive on-site. The SRIP Off-Site Mitigation may create as much as 3.54 acres of riparian habitat over the minimum required for off-site mitigation for SRIP in addition to offsetting the removal of up to 2.75 acres of low-quality riparian woodland and scrub vegetation and up to 0.39 acre of alkali heath patches.

Likewise, the SRIP Off-Site Mitigation is expected to establish as much as 2.2 acres of native coastal sage scrub vegetation on the slope of the berms that would be constructed to define and contain the riparian and wetland habitat areas. That would more than offset the impact of removing the upland scrub vegetation in the lower parts of the SRIP Off-Site Mitigation site.

Therefore, based on a 1:1 ratio of habitat created to compensate for like habitat removed as the result of the SRIP Off-Site Mitigation, in excess of habitat created to provide off-site mitigation for SRIP, impacts to sensitive riparian scrub, alkali heath, and coastal sage scrub vegetation would be fully compensated for by implementation of the SRIP Off-Site Mitigation as proposed. Therefore, with inclusion of the requirement to apply part of the created habitat acreage on the site, in excess of the acreage used as off-site mitigation for SRIP, to offset the actual losses of coastal sage scrub, riparian scrub, and alkali heath patches – each at a 1:1 ratio, no net loss and no net impact to sensitive habitats would occur. After deducting the off-site mitigation for SRIP and the 1:1 habitat replacement for on-site impacts, any additional habitat acreage created may be used by IRWD to compensate for impacts resulting from other IRWD projects, subject to wildlife agency consideration and associated permit requirements.

With the provision to count some of the created habitat as an offset for impacts resulting from grubbing and grading, the SRIP Off-Site Mitigation would result in a less than significant impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to special-status wildlife species compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

As discussed below under Item c), there would be no impact to riparian habitat within the jurisdictional area of San Diego Creek due to seasonal drawdown, thus no jurisdictional areas would be affected.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The SRIP FEIR found that there were no waters of the United States on the SRIP site since Syphon Reservoir is an intrastate isolated water with no apparent interstate or foreign commerce connection. Thus, jurisdictional features identified are only subject to the jurisdiction of the State (i.e., wetlands and non-wetland waters of the State, and CDFW lakes, streams, and associated vegetation). Impacts related to CDFW jurisdiction are addressed in item b) above. The SRIP was found to permanently impact 18.28 acres of wetlands and waters of the State (4.33 acres of wetlands, 13.95 acres of non-wetland waters of the State). The SRIP would also create 5.88 acres of freshwater marsh wetland habitat and enlarge the reservoir, which would expand the open water resources on-site. Thus, the SRIP would result in a beneficial impact, which would increase the amount of potential RWQCB jurisdictional wetlands and water of the State, and impacts would be less than significant.

As explained in **Appendix C**, no wetlands or “waters” subject to state or federal regulatory jurisdiction, such as “waters of the United States” (pursuant to CWA Section 404), or “waters of the State” (pursuant to Porter-Cologne), or streams or lakes (pursuant to California Fish and Game Code Section 1600) occur on the SRIP site. Furthermore, no potential adverse impacts are anticipated to occur to areas under regulatory jurisdiction off-site. During planning and

coordination with the wildlife agencies, CDFW raised a concern regarding the potential for the SRIP Off-Site Mitigation to result in adverse effects to riparian habitat in San Diego Creek (i.e., protected wetlands habitat) by drawing water out of the Creek to supply the habitat mitigation. To address the concern, ESA hydrologists performed a thorough evaluation to determine what the potential drawdown would be and whether that could impact riparian habitat in the Creek downstream from the intake (ESA 2022). The evaluation concluded that most of the water would be drawn during the late winter and early spring when water levels are relatively high so effects would be minimal (or none), and even when lesser amounts were withdrawn at other times that the water level in the Creek downstream would not be lowered substantially. The SRIP Off-Site Mitigation would have no impact involving a substantial adverse effect on State or federally protected wetlands. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to State or federally protected wetlands compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The SRIP would impact 121.43 acres of natural communities during construction on-site. Of this total, 2.70 acres would be temporarily impacted, 95.84 acres would be permanently impacted, and 22.91 acres would be permanently impacted but would be replaced by the creation of riparian/upland areas on site resulting in an equivalent or beneficial impact. These impacts could disrupt local movement and displace wildlife within the SRIP's footprint, particularly within the riparian habitats on-site. The SRIP would avoid 144.31 acres of natural communities; thus, displaced wildlife utilizing upland habitats could disperse to other upland areas on-site, and the impacted areas would not inhibit local or regional movement of wildlife within these avoided areas of the site, though wildlife that is more sensitive to human disturbances and noise may be deterred by the nearby construction activities. Once completed, the enlarged reservoir was found to provide greater water storage capacity and an expanded open water area for migrating birds. The SRIP was found to create at least 6.58 acres of on-site riparian woodland and approximately 5.88 acres of additional on-site woody riparian and/or freshwater marsh habitat that would be maintained to consistently provide habitat year-round, which would be a benefit to migratory species. In addition, approximately 10.47 acres of coastal sage scrub habitat would be created in an area northeast of the reservoir that currently exhibits predominantly low-value ruderal grassland. Therefore, with the creation of the on-site riparian and upland habitat, impacts to local movement are not expected to be significant. Thus, impacts to regional and local wildlife movement are considered less than significant, and no mitigation required.

Regarding the SRIP's potential to "impede the use of native wildlife nursery sites," to the extent mass grading and construction activities occur during the breeding season and in close proximity to active nests or suitable nesting habitat, the SRIP was found to have potentially significant direct impacts. Nesting activity typically occurs from February 15 to August 31 (or January 15 to June 31 for raptors). Implementation of Mitigation Measure BIO-3 would avoid violation of the Fish and Game Code and reduce potential impacts to special-status birds to a less than significant

level. When maintenance of the riparian and upland habitat areas involves vegetation removal (e.g., weeding) and cannot be scheduled outside of nesting season, such work could impact nesting bird species, which could be potentially significant. Implementation of Mitigation Measure BIO-3 was found to reduce impacts to a less than significant level.

For the SRIP Off-Site Mitigation, San Diego Creek is likely to function as a route for local, urban-adapted and sensitive wildlife species to move through this part of the City of Irvine. The SRIP Off-Site Mitigation would not directly affect this feature. During implementation activities, work would be substantially limited to daytime working hours. Since local wildlife movement occurs primarily between dusk and dawn, and no nighttime work is planned or proposed, the SRIP Off-Site Mitigation would not be expected to adversely affect local wildlife movement. As discussed above under Item c), there would be no impact to riparian habitat within San Diego Creek due to seasonal drawdown, thus drawdown would have no substantial effect on wildlife movement. Therefore, the SRIP Off-Site Mitigation is expected to have a less than significant impact because it will not interfere substantially with local wildlife movement.

No native wildlife nursery sites are known to occur on the SRIP Off-Site Mitigation site or in the immediate vicinity. However, the UC property may support nursery sites in the general area and certainly provides habitat for nesting birds in adjacent areas where they could be subject to disturbance during construction. In addition, some bird species could potentially nest on the SRIP Off-Site Mitigation site. Thus, although the SRIP Off-Site Mitigation is not expected to directly affect any native wildlife nursery sites, it is determined that it has the potential to impact nesting birds and could possibly disturb rookeries (e.g., black-crowned night heron) or nursery sites, if present in the near vicinity. Therefore, Mitigation Measure BIO-2 and BIO-3 from the SEIP FEIR would be required, which would reduce the impact to a less than significant level. As a result, the SRIP Off-Site Mitigation would result in similar impacts to wildlife corridors and nesting birds compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Mitigation Measure from the 2021 SRIP FEIR

Implement Mitigation Measure BIO-2 and BIO-3.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The SRIP FEIR analyzed the SRIP's potential to be in conflict with relevant general planning documents of the County of Orange. The County's General Plan's Land Use Element Policy 9, Enhancement of Environment, ensures that all land use activities seek to enhance the physical environment, including the air, water, sound levels, landscape, and plant and animal life, and recognizes the need to improve both the manmade and natural environments. Plant and animal life that may be disrupted by the SRIP would be offset through the creation of riparian and upland habitat areas and proposed mitigation, so while these created habitat and mitigation areas may not enhance the physical environment, they will ensure the preservation of biologically equivalent plant and wildlife resources. Thus, the SRIP was found to not conflict with this policy. The

County’s General Plan’s Resources Element Policy 1, Wildlife and Vegetation requires the identification and preservation of the significant wildlife and vegetation habitats of the County. Impacts to special-status species and sensitive natural communities are analyzed and mitigation is proposed for impacts associated with implementation of the SRIP that are determined to be potentially significant. Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, and BIO-6 were found to reduce impacts to a less than significant level. If maintenance of the riparian and upland habitat areas includes vegetation removal (e.g., weeding) and cannot be scheduled outside of nesting season, impacts to nesting special-status bird species would be potentially significant. Implementation of Mitigation Measure BIO-3 would reduce impacts to a less than significant level.

Trees within the SRIP Off-Site Mitigation that are not within a public right-of-way are not generally subject to the City of Irvine’s Tree Preservation Ordinance. The City requires applicants to obtain a tree removal permit only for trees located in the public right-of-way and for trees considered significant by the City of Irvine Municipal Code, including trees in established eucalyptus windrows. The remnant trees from the abandoned willow grove and other non-native trees or tall shrubs on the site would not fall under the definition of significant trees. Therefore, the SRIP Off-Site Mitigation would have no impact in terms of any potential conflict with the City’s tree preservation ordinance. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to local policies or ordinances compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The SRIP FEIR found that the SRIP is a permitted use within the NCCP/HCP Reserve System. Compliance with specific conditions required for NCCP/HCP conditionally covered species (i.e., least Bell’s vireo) are discussed above. However, the removal of coastal sage scrub communities would be considered potentially significant. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce impacts to a less than significant level. When maintenance of the riparian and upland habitat areas involves vegetation removal (e.g., weeding) and cannot be scheduled outside of nesting season, such work could impact nesting special-status bird species, which could be potentially significant. Implementation of Mitigation Measure BIO-3 would reduce impacts to a less than significant level, and thus would not conflict with the provisions of the Central & Coastal Subregion NCCP/HCP.

The SRIP Off-Site Mitigation site is situated entirely within an area of the Orange County Central-Coastal NCCP/HCP that is designated as “Non-Reserve Open Space” and as such is still subject to the NCCP/HCP requirements, particularly since it is under the ownership of a Participating landowner (IRWD). Furthermore, IRWD is a signatory agency to the NCCP/HCP and is bound to adhere to the relevant guidelines and applicable provisions established by the NCCP/HCP and the Implementing Agreement. According to the Implementing Agreement, “take of Identified [i.e., “covered”] Species related to Planned Activities in the Central-Coastal

Subregion, but outside the Reserve System, on lands owned or controlled by Participating Landowners as of the Effective Date is authorized” as described in the Agreement. In this case, the SRIP Off-Site Mitigation is the off-site mitigation for the SRIP, which is identified in the NCCP as a Planned Activity. In the case of the SRIP Off-Site Mitigation, direct take of certain Identified Species (e.g., California gnatcatcher, least Bell’s vireo, and white-tailed kite) that may occur or forage on-site should be avoided via implementation of mitigation measures, and no net loss of coastal sage scrub habitat is expected to result from the SRIP Off-Site Mitigation. However, some temporary loss of habitat will occur until new habitat areas are established, and that temporal impact is understood to be covered by participation in and adherence to the provisions of the NCCP. Implementation of the SRIP Off-Site Mitigation would have no impact with respect to a conflict with the NCCP/HCP or its provisions. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to conservation plans compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Biological Resources

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to biological resources. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

Environmental Science Associates (ESA), 2022. *San Joaquin Marsh Wetland Mitigation Conceptual Design & Feasibility Study (Syphon Reservoir Project), Responses to U.S. Fish and Wildlife Service Questions*. April 22.

3.5 Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	Yes	No
V. CULTURAL RESOURCES — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?**

The SRIP FEIR identified a total of nine resources within the SRIP, including four prehistoric archaeological sites, an isolated prehistoric mano, a historic-period archaeological site consisting of an artifact scatter and foundation remnants, and three historic period built architectural resources. The SRIP FEIR determined that with implementation of Mitigation Measure CR-1, which provides procedures for avoidance of two unevaluated resources, impacts would be less than significant. Four other resources were presumed to likely be impacted by the SRIP; however, since none of these resources qualify for listing in the National or California Register, none are historical resources as defined in CEQA Guidelines Section 15064.5, and impacts to the resources were determined to not be significant. Additionally, an analysis of indirect impacts to adjacent historical resources was conducted. It was determined that the SRIP would not result in an indirect impact to historical resources and that impacts would be less than significant to known resources. The SRIP FEIR also indicated that the presence of both historic period and prehistoric archaeological sites within, and within the vicinity of the SRIP indicates that the area is sensitive for archaeological resources. The SRIP FEIR included Mitigation Measures CR-1 through CR-4, which require procedures for avoidance of two unevaluated resources at the SRIP site, construction worker sensitivity training, cultural resources monitoring, and treatment of unanticipated discoveries, which would ensure that impacts associated with the SRIP are reduced to a less than significant level.

A confidential cultural resources report was prepared for the SRIP Off-Site Mitigation (ESA 2023). The archival research and pedestrian survey indicate that there is a moderate to high potential for yielding buried prehistoric archaeological resources at the SRIP Off-Site Mitigation. The moderate to high potential is based on the fact that the SRIP Off-Site Mitigation site contains soils (young axial-channel deposits) that are contemporaneous with the period for which there is widely accepted evidence for human occupation of Southern California. The SRIP Off-Site Mitigation site was also once located within a marsh and in close proximity to Sand Canyon

Wash, marshes, and approximately one mile away from Newport Bay. These bodies of water and marshes could have provided fresh water and food sources to prehistoric inhabitants. This moderate to high potential is further supported by the archival research that indicates the presence of several prehistoric archaeological sites consisting of shell middens, human burials and associated artifacts and ecofacts within the 0.50-mile radius of the SRIP Off-Site Mitigation site. This demonstrates that Native Americans once inhabited or were active in the area of the SRIP Off-Site Mitigation site. As a result, impacts are considered potentially significant to archaeological resources qualifying as historical resources. Mitigation Measures CR-2, CR-3, and CR-4 would be required, which involve worker sensitivity training, construction monitoring, and protocols for unanticipated discoveries. With implementation of Mitigation Measures CR-2, CR-3, and CR-4 from the SRIP FEIR, impacts to archaeological resources qualifying as historical resources would be reduced to a less than significant level.³

Mitigation Measures from the 2021 SRIP FEIR

CR-2: Worker Sensitivity Training. Prior to the start of construction activities, all construction personnel should be trained to identify the types of cultural resources that may be encountered during project implementation. These include both prehistoric and historic period archaeological resources. In addition to cultural resources recognition, the training should convey procedures to follow in the event of a potential cultural resources discovery, including notification procedures. The training should be provided by the Qualified Archaeologist or an archaeologist working under their supervision.

CR-3: Construction Monitoring. An archaeological monitor (working under the direct supervision of the Qualified Archaeologist) shall observe all ground-disturbing activities, including but not limited to brush clearance, vegetation removal, grubbing, grading, and excavation, in undisturbed areas of the project site. In addition, the Qualified Archaeologist, in coordination with IRWD, may reduce or discontinue monitoring if it is determined that the possibility of encountering buried archaeological deposits is low based on observations of soil stratigraphy or other factors. Archaeological monitoring shall be conducted by an archaeologist familiar with the types of archaeological resources that could be encountered within the project site. The archaeological monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of a discovery until the Qualified Archaeologist has evaluated the discovery, consulted with IRWD, and determined appropriate treatment (as prescribed in CR-3). The archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the Qualified Archaeologist shall prepare a monitoring report that details the results of monitoring. The report shall be submitted to IRWD and any Native American groups who request a copy. The Qualified Archaeologist shall submit a copy of the final report to the California Historic Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC).

In addition, prior to the commencement of earthwork activities, IRWD shall provide written notification to the Native American representatives from the Gabrieleno Band of Mission Indians - Kizh Nation indicating the date and time of the commencement of earthwork activities. The representatives from the Gabrieleno Band of Mission Indians - Kizh Nation (“tribal representative”) shall be provided reasonable access to the project site in a manner that does not interfere with the earthwork activities. Tribal

³ IRWD has complied with all applicable tribal consultation requirements (see Public Resources Code § 21080.3.1).

representatives, at their own expense, and in a manner that does not interfere with earthwork activities, shall be allowed to monitor subsurface ground-disturbing construction activities. The monitoring may consist of either direct observation of the earthwork activities or the examination of the excavated soils prior to disposal for evidence of cultural resources. If any cultural resources are identified during the monitoring and evidence is presented that the discovery proves to be potentially significant under CEQA, as determined by IRWD's consulting Qualified Archaeologist, additional measures such as data recovery excavation, avoidance of the area of the find, documentation, testing, data recovery, reburial, archival review and/or transfer to the appropriate museum or educational institution, or other appropriate actions may be warranted as recommended by IRWD's consulting Qualified Archeologist in consultation with the tribal representative.

CR-4: Protocols for Unanticipated Discoveries. If cultural resources are encountered during project implementation, all activity within 50 feet of the find should cease until the find can be evaluated by the Qualified Archaeologist. If the Qualified Archaeologist determines that the resources may be significant, he or she will notify IRWD and develop an appropriate treatment plan for the resource. IRWD should consult with the Native American monitor or other appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Under CEQA, preservation in place is the preferred manner of mitigating impacts to archaeological sites. In considering any suggested measures proposed by the archaeologist to mitigate impacts to archaeological resources, IRWD will determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures will be instituted, which could include, among other options, detailed documentation, or data recovery excavation. Work may proceed on other parts of the project area while mitigation for cultural resources is being carried out.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

As previously mentioned in section a above, the SRIP FEIR identified a total of nine resources within the SRIP Off-Site Mitigation site, including four prehistoric archaeological sites, an isolated prehistoric mano, a historic-period archaeological site consisting of an artifact scatter and foundation remnants, and three historic period built architectural resources. The SRIP FEIR determined that with implementation of Mitigation Measure CR-1, which provides procedures for avoidance of two unevaluated resources, impacts would be less than significant. The SRIP FEIR also included Mitigation Measures CR-2 through CR-4, which require construction worker sensitivity training, cultural resources monitoring, and treatment of unanticipated discoveries, which would ensure that impacts associated with the SRIP are reduced to a less than significant level.

The SRIP Off-Site Mitigation contains a moderate to high potential for yielding buried prehistoric archaeological resources based on the age of the soils contemporaneous with the period for which there is widely accepted evidence for human occupation of Southern California, proximity to bodies of water and marshes which could have provided fresh water and food sources to prehistoric inhabitants, and several prehistoric archaeological sites within the 0.50-mile radius of

the SRIP Off-Site Mitigation site. As a result, impacts are considered potentially significant to archaeological resources. Mitigation Measures CR-2, CR-3, and CR-4 would be required, which involve worker sensitivity training, construction monitoring, and protocols for unanticipated discoveries. With implementation of Mitigation Measures CR-2 through CR-4 from the SRIP FEIR, impacts to archaeological resources would be reduced to a less than significant level.

Mitigation Measures from the 2021 SRIP FEIR

Implement Mitigation Measures CR-2 through CR-4.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

The SRIP FEIR determined that the potential to disturb human remains is low and that state laws dictate appropriate treatment of any unearthed human remains. As a result, the SRIP FEIR concluded a less than significant impact to human remains.

Similar to the SRIP FEIR, if human remains are encountered through implementation of the SRIP Off-Site Mitigation, state laws which dictate appropriate treatment of any unearthed human remains will be followed. These state laws include California Health and Safety Code Section 7050.5 (which requires that in the event human remains are discovered, the County Coroner be contacted to determine the nature of the remains) and California PRC Section 5097.98 (which provides procedures in the event human remains of Native American origin are discovered during SRIP Off-Site Mitigation implementation). As a result, any SRIP Mitigation impacts to human remains would be less than significant.

Summary of Potential Effects on Cultural Resources

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to cultural resources. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

While preparing the EIR, IRWD engaged in a consultation process with the Gabrieleno Band of Mission Indians - Kizh Nation and other tribal entities pursuant to Public Resources Code section 21080.3.1. No parties objected to the adequacy of the consultation process or the adequacy of adopted mitigation measures prior to the close of the public hearing in July 2021.

References

ESA, 2023. *Confidential Cultural Resources Report for the Syphon Reservoir Improvement Project Off-Site Mitigation, City of Irvine, County of Orange, California*. December 2023.

3.6 Energy

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
VI. ENERGY — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation**

The SRIP FEIR identified that the SRIP would result in energy demand from the use of construction equipment for a temporary period of time for approximately 41 months. As discussed in the SRIP FEIR, energy demand from the use of transportation fuels from construction activities would be generated by the operation of vehicles and equipment used for various construction activities, such as excavation and grading. Electricity would be consumed to power the construction trailers (lights, electronic equipment, and heating and cooling) and exterior uses such as lights, conveyance of water for dust control, and any electrically-driven construction equipment. Construction-related energy and transportation fuel demand from construction equipment would vary depending on factors such as the type and number of equipment and the time duration that each equipment is powered on and used. The SRIP FEIR determined that the SRIP would use electricity for necessary construction-related activities and would be limited to working hours. Natural gas would not be consumed during construction of the SRIP. Construction equipment and trucks would be required to comply with applicable provisions of regulations to improve fuel efficiency. Therefore, construction of the SRIP was found to not result in the wasteful, inefficient, or unnecessary consumption of transportation fuel resources and impacts would be less than significant.

The SRIP FEIR determined that the operational activities associated with the SRIP would not increase the average daily traffic (ADT) volumes along the major thoroughfares within the project vicinity. Operation of the proposed enlarged Syphon Reservoir would be controlled remotely by existing employees; no additional employees would be required onsite daily for operational activities. During operation of the SRIP, electricity would be consumed for the operation of the Treatment Facility, which includes electricity for building lighting and electric-powered pumps and other equipment. Building lighting would be energy-efficient (i.e., light-emitting diode [LED]) and the pumps and other equipment installed would be new and designed to meet applicable current energy standards for such equipment. No natural gas would be used during operational activities. The objectives of the SRIP include reducing the need to purchase supplemental imported untreated water from the Metropolitan Water District of Southern California (MWD) by storing recycled

water that is already being produced at the Michelson WRP. Conveying imported untreated water from the State Water Project and the Colorado River to Orange County requires a tremendous amount of energy for pumping. Replacing imported water with locally generated recycled water reduces the overall energy associated with importing water since there would be less energy needed for conveyance. Replacing imported water with recycled water stored under the SRIP would reduce the electricity used for water supply and conveyance by approximately 3,699,000 kWh annually. Given the minimal energy consumption of the SRIP and that the project would save energy related to imported water and would be designed with energy efficient lighting and equipment, operation of the SRIP would not result in a substantial increase in energy consumption and would not result in the wasteful, inefficient, or unnecessary consumption of electricity resources; impacts were found to be less than significant.

The SRIP Off-Site Mitigation would require the use of generally similar types of construction equipment as the SRIP. However, the duration and associated construction electricity and transportation fuel demand would be required over a much shorter duration than the SRIP. As stated above, approximately seven months would be needed for site preparation, grading of channels and berms, and installation of irrigation infrastructure, while the last 15 months would be needed for site vegetation planting, which would not require heavy-duty equipment and would not generate substantial construction electricity and transportation fuel demand. Similar to the SRIP, the SRIP Off-Site Mitigation would comply with the City of Irvine Municipal Code, Section 6-8-205, which restricts construction to between the allowed hours of 7 a.m. to 7 p.m. Mondays through Fridays, and 9 a.m. to 6 p.m. on Saturdays, which would limit the need for lighting and associated electricity demand. Similar to the SRIP, the SRIP Off-Site Mitigation would use limited electricity for electrically driven construction devices such as air compressors, pumps and other equipment, and the operation of the construction trailer. Electricity for the temporary construction office would be accessed from the existing electrical grid via temporary connections to provide temporary power and would be disconnected when construction activities cease. Natural gas would not be consumed during construction of the SRIP Mitigation. Construction equipment and trucks would be required to comply with applicable provisions of regulations to improve fuel efficiency, including the Phase 1 and Phase 2 heavy-duty truck standards. Furthermore, trucks would need to comply with the 2004 CARB Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling to 5 minutes or less at any given location. Therefore, construction of the SRIP Mitigation would not result in the wasteful, inefficient, or unnecessary consumption of transportation fuel resources and impacts would be less than significant.

Operation of the SRIP Mitigation would require annual inspections, routine checks of the water supply pipeline, irrigation of the freshwater marsh, plant care and replacement as needed, and other maintenance such as erosion control and trash removal. It is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Mitigation would not generate substantial numbers of vehicle trips. Furthermore, the existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Mitigation without alteration. Therefore, operation of the SRIP Mitigation would not result in the wasteful, inefficient, or unnecessary consumption of transportation fuel resources and impacts would be less than significant.

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to wasteful, inefficient, or unnecessary consumption of energy resources, during construction or operation and no mitigation would be required. Furthermore, as discussed above, the duration and associated construction electricity and transportation fuel demand would be required over a much shorter duration than the SRIP. Therefore, the SRIP Mitigation would not result in an increase in severity of impacts to energy compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

The SRIP FEIR determined that the SRIP would be designed in a manner consistent with relevant energy efficiency plans, such as Integrated Energy Policy Report, and the California Building Standards, designed to encourage development that results in the efficient use of water resources. The SRIP would increase the capacity of the Syphon Reservoir, thereby providing a local, consistent supply of recycled water for the IRWD service area. This would reduce the energy consumption needed to provide water to IRWD’s recycled water customers. Replacing imported water with recycled water stored under the SRIP would reduce the electricity used for water supply and conveyance by approximately 3,699,000 kWh annually. The SRIP FEIR discussed the CARB 2017 Climate Change Scoping Plan, which provided the State strategy for reducing greenhouse gas (GHG) emissions at the time of the SRIP FEIR and includes various energy efficiency strategies to achieve the GHG reduction goals including recognition of the nexus between water and energy consumption. The water-energy nexus provides opportunities for reducing energy demand and reducing emissions of greenhouse gases. The 2017 Climate Change Scoping Plan, states that “recycled water has the potential to reduce GHGs if it replaces, and not merely serves as an alternative to, an existing, higher-carbon water supply” (CARB 2017). Given the water-energy nexus, this means recycled water has the potential to reduce energy consumption if it replaces more energy-intensive water supplies. Thus, the SRIP was found to be consistent with the 2017 Climate Change Scoping Plan’s strategy to reduce water-related energy consumption. As a result, the SRIP would not conflict with or obstruct a State or local plan for energy efficiency and impacts would be less than significant.

Similar to the SRIP, the SRIP Off-Site Mitigation would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. With respect to truck fleet operators, the United States Environmental Protection Agency (USEPA) and National Highway Traffic Safety Administration (NHTSA) have adopted fuel efficiency standards for medium- and heavy-duty trucks. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles and are phased in for model years 2014 through 2018 and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type (USEPA 2011). USEPA and NHTSA also adopted the Phase 2 heavy-duty truck standards, which would be phased in from model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type (USEPA 2016). These regulations would have an overall beneficial effect on reducing fuel consumption from trucks over time as older trucks are replaced with newer models that meet the standards. In addition, construction equipment and trucks are required to comply with CARB regulations regarding heavy-duty truck idling limits of five minutes at a location and the phase-in of

off-road emission standards that result in an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines. Although these regulations are intended to reduce criteria pollutant emissions, compliance with the anti-idling and emissions regulations would also result in the efficient use of construction related energy. As discussed above, it is the intent of the SRIP Off-Site Mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Off-Site Mitigation would not generate substantial numbers of vehicle trips. Furthermore, the existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration. Based on the above, the SRIP Off-Site Mitigation would not conflict with plans for energy efficiency and impacts would be less than significant.

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to conflicts with or obstruction of a state or local plan for renewable energy or energy efficiency during construction or operation and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to energy efficiency compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Energy

The proposed modifications will not result in substantial changes to energy, cause new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to energy. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

- CARB, 2017. *California's 2017 Climate Change Scoping Plan: The strategy for achieving California's 2030 greenhouse gas target*, November. Available at www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.
- U.S. Environmental Protection Agency (USEPA), 2011. Fact Sheet: EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles, August. <https://www.eesi.org/files/420f11031.pdf>. Accessed August 25, 2022.
- USEPA, 2016. Federal Register/Vol. 81, No. 206/Tuesday, Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2, October 25. <https://www.govinfo.gov/content/pkg/FR-2016-10-25/pdf/2016-21203.pdf>. Accessed August 25, 2022.
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3.7 Geology and Soils

Issues (and Supporting Information Sources):	Yes	No
VII. GEOLOGY AND SOILS — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

a.i) - a.iv) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42; Strong seismic ground shaking, Seismic related ground failure including liquefaction, or landslides

The SRIP FEIR identified that the SRIP would not be located on an active earthquake fault but would be located within a seismically active region. The SRIP FEIR concluded that the SRIP could be subject to seismic shaking and seismic-induced ground failures, such as liquefaction, but not landslides. However, the SRIP FEIR further explained that the DSOD would require a final geotechnical investigation to be prepared that would identify geotechnical issues, including seismic-related issues, and provide recommendations to address geotechnical issues, if any. The preparation of a geotechnical investigation and implementation of geotechnical recommendations would ensure impacts would be less than significant.

The SRIP Off-Site Mitigation would be constructed on a portion of the San Joaquin Freshwater Marsh, as shown on **Figure 2**. This location is also not located on an active earthquake fault; the nearest active fault is the San Joaquin Hills Fault, located almost two miles to the north. Similar to the SRIP, this area would also be subject to seismic shaking and seismic-induced ground failure. However, this location is a marshy area composed of the Omni-Series Clay that would not be susceptible to liquefaction because the soil unit is not sandy (NRCS 2023). In addition and unlike the SRIP, this area is relatively flat and would not be susceptible to landslides. Finally, unlike the seismic requirements for changes to the dam for the SRIP required by the DSOD, the SRIP Off-Site Mitigation would not include structures that would be required to resist seismic damage. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts relative to seismic shaking and seismic-induced ground failure compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Result in substantial soil erosion or the loss of topsoil?

The SRIP FEIR identified that the SRIP includes slopes that could be susceptible to erosion. Some of the local geologic units are rated as generally having very poor slope stability characteristics and are described as landslide-prone (and consequently also erosion prone) units. Several existing potential landslide areas are present. However, the SRIP FEIR further explained that a final geotechnical would be prepared that would identify geotechnical issues, including geologic units susceptible to erosion, and provide recommendations to address such geotechnical issues. The preparation of a geotechnical investigation and implementation of geotechnical recommendations would ensure impacts would be less than significant.

The SRIP Off-Site Mitigation would be constructed on a portion of the San Joaquin Freshwater Marsh, as shown on **Figure 2**. Unlike the SRIP, this area is relatively flat and does not have slopes that could be susceptible to erosion from water. The SRIP Off-Site Mitigation would include reworking the interior of the area to create channels and berms with the goal of the site being a net zero site (i.e., no materials would be imported or exported). If the soils within the site are unsuitable for reuse to create berms, up to 22,000 cubic yards of fill would imported to the site and 29,000 cubic yards would be needed to be disposed of offsite. Nonetheless, the site would still be relatively flat and not conducive to erosion. Finally, with the restoration of habitat, the restored vegetation would stabilize soil and prevent significant erosion and loss of topsoil. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts relative to seismic shaking and seismic-induced ground failure compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The SRIP FEIR identified that the SRIP site includes geologic units and slopes that could be susceptible to landslides. In addition, the construction of the dam could be susceptible to

subsidence due to settlement of the dam materials. However, the SRIP FEIR further explained that a final geotechnical investigation would be prepared that would identify geotechnical issues, including landslides and settlement, and provide recommendations to address such geotechnical issues. The preparation of a geotechnical investigation and implementation of geotechnical recommendations would ensure impacts would be less than significant.

Unlike the SRIP, the SRIP Off-Site Mitigation would be constructed on an area that is relatively flat and would not be susceptible to landslides. In addition, SRIP Off-Site Mitigation does not include the construction of structures (e.g., a dam) that could be susceptible to or cause subsidence. Finally, and as previously discussed above in Impact a), the soils at the marsh are not sandy and not susceptible to liquefaction or lateral spreading (NRCS 2023). Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts relative to unstable geologic units or soil compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Be located on expansive soil creating substantial direct or indirect risks to life or property?

The SRIP FEIR identified that the only expansive soils identified for the SRIP would be lake bottom materials. However, these materials would not be used for construction of the dam and would remain at the bottom of the lake and impacts would be less than significant.

The SRIP Off-Site Mitigation would consist of reworking the marsh area to create channels and berms. This location is a marshy area composed of the Omni-Series Clay that is considered to be expansive (NRCS 2023). However, unlike the SRIP, no structures, such as a dam, would be constructed; only irrigation piping would be installed. In addition, damage from expansive soils is the result of cycles of wetting and drying, which can cause expansive soils to expand and contract. The marsh area is currently mostly saturated and will remain so as a result of the SRIP Off-Site Mitigation. Therefore, similar to the SRIP, the SRIP Off-Site Mitigation would result in similar impacts relative to expansive soils compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

The SRIP FEIR identified that the SRIP would not use septic tanks or other onsite wastewater disposal systems. Therefore, there would be no impact related to the adequacy of soils to support such systems. Similarly, the SRIP Off-Site Mitigation would also not use septic tanks or other onsite wastewater disposal systems. Therefore, similar to the SRIP, the SRIP Off-Site Mitigation would result in similar impacts relative to septic tanks or alternative wastewater disposal systems compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The SRIP FEIR identified that the SRIP includes geologic units that may contain paleontological resources. The SRIP FEIR described Mitigation Measures GEO-1 through GEO-4 to ensure that impacts to paleontological resources are reduced to less than significant levels.

The SRIP Off-Site Mitigation would be constructed on a portion of the San Joaquin Freshwater Marsh. The maximum depth of excavation would be eight feet. Unlike the SRIP, the geologic materials in the marsh area are relatively young, defined by the Society of Vertebrate Paleontology (SVP) as less than 5,000 years before present (SVP 2010). Therefore, the surface and shallow marsh materials are too young to contain significant paleontological resources. Additionally, the SRIP Off-Site Mitigation site was previously graded in 1989, and as a result the soils have been disturbed. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts relative to paleontological resources compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Geology and Soils

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to geology and soils. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

Natural Resources Conservation Service (NRCS), 2023. *Omni Clay*. August 30.

Society of Vertebrate Paleontology, 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*.

3.8 Greenhouse Gas Emissions

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
VIII. GREENHOUSE GAS EMISSIONS — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment**

The SRIP FEIR identified that the SRIP would generate greenhouse gas (GHG) emissions from vehicle trips generated by construction workers, vendor trucks, and haul trucks traveling to and from the SRIP site and the use of construction equipment. Operation of the SRIP was found to not result in new or increased use of motor vehicles, aside from periodic maintenance vehicles. The SRIP was found to result in the additional electricity demand to power equipment, which would result in electricity-related GHG emissions. GHG emissions were quantified based on guidance from State and regional agencies with scientific expertise in quantifying GHG emissions, including the CARB and the SCAQMD. Similar to air pollutant emissions, GHG emissions were estimated using the CalEEMod for off-road equipment and the EMFAC model for on-road vehicles. Because potential impacts resulting from GHG emissions would be long-term rather than acute, GHG emissions were calculated on an annual basis. In accordance with SCAQMD guidance, GHG emissions from construction have been amortized (i.e., averaged annually) over the lifetime of the SRIP. SCAQMD defines the lifetime of a project as 30 years. Therefore, the SRIP's total construction GHG emissions are divided by 30 to determine annual construction emissions estimate comparable to operational emissions. The objectives of the SRIP include reducing the need to purchase supplemental imported untreated water from MWD by storing recycled water that is already produced. Conveying imported untreated water from the SWP and the Colorado River to Orange County requires energy for pumping. Replacing imported water with locally generated recycled water reduces the overall energy associated with imported water since there would be less energy needed for conveyance. This reduction in energy would result in district-wide energy savings. The SRIP FEIR determined that the SRIP's annual GHG emissions would not exceed the threshold of significance. Therefore, GHG emission impacts with respect to the generation of GHGs were found to be less than significant.

The SRIP Off-Site Mitigation would be installed on land owned by IRWD in the San Joaquin Freshwater Marsh and is surrounded by vegetated areas on all sides. Construction of the SRIP Off-Site Mitigation would last for up to approximately 22 months, with the last approximately 15

months for minimally intensive site vegetation planting activities. Construction would occur at the same time as the SRIP and would include site preparation, grading of channels and berms, installation of irrigation infrastructure, and site vegetation planting. Similar to the SRIP, the SRIP Off-Site Mitigation would require the use of heavy-duty construction equipment, haul trucks, and worker vehicles. Construction equipment required for site preparation would include a mower, loader, truck, and dozer. Approximately 30 to 50 haul truck trips (15 to 25 inbound trips and 15 to 25 outbound trips) per day would be required over the one-month site preparation phase with approximately 5 workers per day. Construction equipment required for grading of the channels and berms would include compactors, excavators, graders, trucks, scrapers, tractors/loaders/backhoes, and dozers. Up to approximately 120 haul truck trips (60 inbound trips and 60 outbound trips) per day would be required over the three-month site grading phase with approximately 14 workers per day. Construction of the irrigation infrastructure would require concrete/industrial saws, jack hammers, hydraulic hammers, skidders/dozers, excavators, backhoes, loaders, trenchers, pumps, trucks, hoppers, rollers/compactors, and compactors. Up to approximately 8 haul truck trips (4 inbound trips and 4 outbound trips) would be required per day over the three-month duration with approximately 6 to 12 workers per day. Site vegetation planting would require the use of trucks and hand equipment. The SRIP Off-Site Mitigation could require plants and other materials to be transported to the site resulting in approximately 90 total truck trips to/from the site. The number of truck trips on any given day would be minimal and expected to be less than 5 on any given day. A total of up to 6 to 20 workers would be needed per day for construction activities associated with site vegetation planting.

The SRIP Off-Site Mitigation would require the use of generally similar types of construction equipment as the SRIP. However, the duration and associated construction electricity and transportation fuel demand would be required over a much shorter duration than the SRIP. As stated above, approximately seven months would be needed for site preparation, grading of channels and berms, and installation of irrigation infrastructure, while the last 15 months would be needed for site vegetation planting, which would not require heavy-duty equipment and would not generate substantial construction GHG emissions. Similar to the SRIP, the SRIP Off-Site Mitigation would use limited electricity during construction. Electricity for the temporary construction office would be accessed from the existing electrical grid via temporary connections to provide temporary power and would be disconnected when construction activities cease. Construction equipment and trucks would be required to comply with applicable provisions of regulations to improve fuel efficiency. Furthermore, trucks would need to comply with the California Air Resources Board (CARB) Air Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling to 5 minutes or less at any given location. Operation of the SRIP Off-Site Mitigation would require annual inspections, routine checks of the water supply pipeline, irrigation of the freshwater marsh, plant care and replacement as needed, and other maintenance such as erosion control and trash removal. It is the intent of the SRIP Off-Site Mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Off-Site Mitigation would not generate substantial numbers of vehicle trips. Furthermore, the existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration.

GHG emissions from construction and operation of the SRIP Off-Site Mitigation were estimated using the CalEEMod for off-road equipment and the EMFAC model for on-road vehicles. Consistent with the methodology in the SRIP FEIR, total construction GHG emissions are divided by 30 and added to the annual operational emissions. Annual GHG emissions from the SRIP Off-Site Mitigation are added to the annual GHG emissions in the SRIP FEIR and compared to the GHG emissions significance threshold in the SRIP FEIR. **Table 6** shows the annual GHG emissions from the SRIP and the SRIP Off-Site Mitigation. As shown, annual emissions, including amortized construction emissions, would not exceed the significance threshold. Thus, the SRIP Off-Site Mitigation would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

**TABLE 6
ANNUAL OPERATIONAL GHG EMISSIONS – SRIP AND SRIP OFF-SITE MITIGATION**

Source	MTCO _{2e}
SRIP FEIR	
SRIP (See SRIP FEIR)	480
District-wide Energy Savings	(535)
<i>Subtotal Annual SRIP Emissions</i>	<i>(55)</i>
SRIP Off-Site Mitigation	
Area	0
Energy	0
Mobile Source	26
Waste	1
Water	0
<i>Subtotal Annual Operational Emissions</i>	<i>27</i>
Total Construction Emissions	722
Amortized Construction Emissions	24
<i>Subtotal Annual SRIP Off-Site Mitigation Emissions</i>	<i>51</i>
Total Net Annual SRIP and SRIP Off-Site Mitigation Emissions	(4)
Screening Level	3,000
Exceed Screening Level?	No
NOTE:	
Detailed emissions calculations are provided Appendix B of this Addendum.	
SOURCE: ESA, 2020; 2023	

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to GHG emissions and no mitigation would be required. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

The SRIP FEIR determined that the SRIP would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. The objectives of the SRIP include reducing the need to purchase supplemental imported untreated water from MWD by storing recycled water that is already produced. Conveying imported untreated water from the SWP and the Colorado River to Orange County requires a tremendous amount of energy for pumping. Replacing imported water with locally generated recycled water reduces the overall energy associated with imported water since there would be less energy needed for conveyance. By providing IRWD customers with recycled water stored under the SRIP, electricity used for water supply and conveyance from imported water would be offset by the recycled water, thus reducing district-wide GHG emissions. The CARB 2017 Climate Change Scoping Plan, the State's plan to reduce GHG emissions at the time of the SRIP FEIR, recognizes the nexus between water and energy consumption. The water-energy nexus provides opportunities for reducing energy demand and reducing emissions of GHGs. The 2017 Climate Change Scoping Plan states that "recycled water has the potential to reduce GHGs if it replaces, and not merely serves as an alternative to, an existing, higher-carbon water supply" (CARB 2017). Thus, the SRIP would be consistent with and not conflict with the Scoping Plan's strategy to reduce water-related GHG emissions. The SRIP would also not result in employment growth in excess of regional projections by the Southern California Association of Governments. Thus, the SRIP would not conflict with the vehicle miles traveled (VMT) reduction strategies and targets in Senate Bill 375 nor the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Further, the SRIP would not conflict with applicable regulations to reduce GHG emissions such as the CARB Airborne Toxics Control Measure (ATCM) that limits heavy-duty diesel motor vehicle idling to five minutes at a location. Therefore, the SRIP was found to not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant.

In December 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan), which outlines the strategies the state will implement to achieve carbon neutrality by reducing GHGs to meet the anthropogenic target and by expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical approaches. The major element of the 2022 Scoping plan is the decarbonization of every sector of the economy. The 2022 Scoping Plan "is the most comprehensive and far-reaching Scoping Plan developed to date" and "modeling for this Scoping Plan shows that this decade must be one of transformation on a scale never seen before to set us up for success in 2045" (CARB 2022). The 2022 Scoping Plan includes the Scoping Plan Scenario, which "builds on and integrates efforts already underway to reduce the state's GHG, criteria pollutant, and toxic air contaminant emissions by identifying the clean technologies and fuels that should be phased in as the state transitions away from combustion of fossil fuels." (CARB 2022). For the first time, the 2022 Scoping Plan considers how the State's natural working lands contribute to the State's long-term climate goals. The 2022 Scoping Plan considers land management activities that prioritize restoration and enhancement of ecosystem functions to improve climate adaptation and resilience to climate change impacts, including more stable carbon stocks (CARB 2022). In the 2022

Scoping Plan, the Natural Working Lands (NWL) strategy recommends conserving 30 percent of the state’s NWL and coastal waters by 2030 by implementing near- and long-term actions to accelerate natural removal of carbon and build climate resilience in the State’s forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities—and in particular low-income, disadvantaged, and vulnerable communities. The purpose of the SRIP Off-Site Mitigation is to establish a mix of riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation would not conflict with the 2022 Scoping Plan NWL strategy and would support land preservation/conservation efforts.

Similar to the SRIP, the SRIP Off-Site Mitigation would not result in employment growth in excess of regional projections by the Southern California Association of Governments. Thus, the SRIP would not conflict with the VMT reduction strategies and targets in Senate Bill 375 nor the 2020-2045 RTP/SCS. Further, the SRIP Off-Site Mitigation would not conflict with applicable regulations to reduce GHG emissions such as the CARB ATCM that limits heavy-duty diesel motor vehicle idling to five minutes at a location. Therefore, the SRIP Off-Site Mitigation would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant.

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs during construction or operation and no mitigation would be required. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Greenhouse Gas Emissions

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to greenhouse gas emissions. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.).

References

California Air Resources Board (CARB), 2017. *California’s 2017 Climate Change Scoping Plan: The strategy for achieving California’s 2030 greenhouse gas target*, November. Available at www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

CARB, 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022. Available at https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf.

3.9 Hazards and Hazardous Materials

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
IX. HAZARDS AND HAZARDOUS MATERIALS — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a, b) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

The SRIP FEIR identified that for the SRIP, construction equipment and materials may include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures, which are all commonly used in construction. These chemicals would be stored and used in accordance with all applicable federal, State, and local laws and regulations, along with manufacturers specifications. In addition, the construction contractor would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities in compliance with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit requirements. The SWPPP would list the hazardous materials proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe best management practices (BMPs) for controlling site runoff. Finally, contractors would be required to prepare and implement Hazardous Materials Business Plans (HMBPs) that would require that hazardous materials used for construction would be used

properly and stored in appropriate containers with secondary containment to contain a potential release. Compliance with laws, regulations, and manufacturers specifications would ensure impacts would be less than significant.

The SRIP FEIR identified that the SRIP would use chemicals during operations. Sodium bisulfite would be used for water dechlorination, and sodium hypochlorite would be used for water treatment. As required by the State's Hazardous Materials Management Program, IRWD, as the operator of the proposed facility would be required to prepare and submit a HMBP that would be required to include information on hazardous material handling and storage, including site layout, storage in appropriate containers with secondary containment to contain a potential release, and emergency response and notification procedures in the event of a spill or release. All hazardous materials are required to be stored and handled according to manufacturer's directions and local, state and federal regulations. Compliance with laws, regulations, and manufacturers specification would ensure impacts would be less than significant.

During construction of the SRIP Off-Site Mitigation, construction equipment and materials may include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, which are all commonly used in construction. These chemicals would be stored and used in accordance with all applicable federal, State, and local laws and regulations, along with manufacturers specifications. In addition, construction contractors would be required to prepare a SWPPP for construction activities in compliance with NPDES General Construction Permit requirements. The SWPPP would list the hazardous materials proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe BMPs for controlling site runoff. Finally, contractors would be required to prepare and implement HMBPs that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. Compliance with laws, regulations, and manufacturer specifications would ensure impacts would be less than significant. Therefore, the SRIP Off-Site Mitigation would result in similar impacts relative to hazardous materials compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The SRIP FEIR identified that transport of hazardous materials during construction and operation of the SRIP could use haul routes that pass by schools. As described above under Impact a) and b), construction and operation activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including in proximity to schools. The required compliance with the numerous laws and regulations that govern the transportation, use, handling, and disposal of hazardous materials during construction and operation of the SRIP would ensure the potential risks to schools related to emitting and handling hazardous substances would remain less than significant.

Hazardous materials would not be used during operation of the SRIP Off-Site Mitigation. During construction of the SRIP Off-Site Mitigation, construction equipment and materials may include fuels, oils and lubricants, solvents and cleaners, and cements and adhesives, which are all commonly used in construction. These chemicals would be stored and used in accordance with all applicable federal, State, and local laws and regulations, along with manufacturers specifications. In addition, construction contractors would be required to prepare a SWPPP for construction activities in compliance with NPDES General Construction Permit requirements. The SWPPP would list the hazardous materials proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe BMPs for controlling site runoff. Finally, contractors would be required to prepare and implement HMBPs that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. Compliance with laws, regulations, and manufacturers specification would ensure impacts would be less than significant. Therefore, the SRIP Off-Site Mitigation would result in similar impacts relative to hazardous materials compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The SRIP and the SRIP Off-Site Mitigation are not included on a list of hazardous materials sites (Cortese List) compiled pursuant to Government Code Section 65962.5. Therefore, SRIP Off-Site Mitigation would result in no impact and would not alter the conclusions of the SRIP FEIR.

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

The SRIP is located outside of the Airport Planning Areas for the operational airports in Orange County; therefore, there would be no impact.

The SRIP Off-Site Mitigation is located 1.5 miles southeast of the John Wayne Airport. However, the landing and takeoff flight paths of the airport are to the southwest and northeast, and do not pass over the SRIP Off-Site Mitigation. Therefore, the SRIP Off-Site Mitigation is outside of the Airport Planning Areas for the airport. Therefore, the SRIP Off-Site Mitigation would result in no impact and would not alter the conclusions of the SRIP FEIR.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The SRIP FEIR identified that SRIP site is bounded by two evacuation routes: Portola Parkway to the west and SR-133 to the southeast. The SRIP would modify the existing intersection and associated traffic lights to allow construction access through the intersection directly into the

SRIP site. The intersection modification would not involve closure of any roadways; however, temporary lane closures could be required, for example to allow for restriping of lanes or creating the curb cut and entrance to the proposed access road. However, to ensure that impacts related to the circulation system do not occur as a result of the SRIP, IRWD would implement Mitigation Measure TRA-1, which would require the preparation and implementation of a Traffic Control Plan. The Traffic Control Plan would include, but not be limited to, signage, striping, delineated detours, flagging operations, changeable message signs, delineators, arrow boards, and K-Rails that would be used during construction to guide motorists, bicyclists, and pedestrians safely through the proposed construction area and allow for adequate emergency access and circulation to the satisfaction of the City of Irvine. Therefore, with implementation of Mitigation Measure TRA-1, impacts to the circulation system during the initial intersection improvement phase of the SRIP would be reduced to a less than significant level, and project construction would not impair or physically interfere with emergency response teams or an evacuation plan. Impacts would be less than significant with mitigation.

The operation of the SRIP would be substantially similar to current conditions respective to emergency response and evacuation. No operation-related activities would occur within surrounding rights-of-ways or along evacuation routes. The SRIP would not impair implementation of or physically interfere with the City of Irvine Evacuation Plan. As a result, no impact would occur during operations.

The SRIP Off-Site Mitigation would be accessed from Campus Drive. Construction of the water supply pipeline could potentially require localized closure of Campus Drive and trails along the San Diego Creek levee and marsh area. Similar to the SRIP, the SRIP Off-Site Mitigation could impair implementation of or physically interfere with the City of Irvine Evacuation Plan. IRWD would be required to implement Mitigation Measure TRA-1, which would require the preparation and implementation of a Traffic Control Plan. The Traffic Control Plan would include, but not be limited to, signage, striping, delineated detours, flagging operations, changeable message signs, delineators, arrow boards, and K-Rails that would be used during construction to guide motorists, bicyclists, and pedestrians safely through the proposed construction area and allow for adequate emergency access and circulation to the satisfaction of the City of Irvine. Therefore, with implementation of Mitigation Measure TRA-1, impacts to the circulation system during construction of the SRIP Off-Site Mitigation would be reduced to a less than significant level.

Once constructed, only occasional maintenance personnel would access the site and no lane closures or restrictions would occur. As a result, no impact would occur during construction and operations. Therefore, the SRIP Off-Site Mitigation would result in similar impacts relative to emergency access compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Mitigation Measures from the 2021 SRIP FEIR

TRA-1: Traffic Control Plan. Prior to the start of construction, IRWD shall require the construction contractor to prepare and have approved a Traffic Control Plan. The Traffic Control Plan will show all signage, striping, delineated detours, flagging operations, and any other devices that will be used during installation of the improvements ~~at the~~

~~intersection of Sand Canyon Avenue and Portola Parkway~~ to guide motorists, bicyclists, and pedestrians safely through the construction area and allow for adequate access and circulation to the satisfaction of the City of Irvine, as applicable. The Traffic Control Plan shall be prepared in accordance with the City of Irvine's traffic control guidelines and will be prepared to ensure that emergency access will not be restricted. Additionally, the Traffic Control Plan will ensure that congestion and traffic delays are not substantially increased as a result of the construction activities. Further, the Traffic Control Plan will include detours or alternative routes for bicyclists using on-street bicycle lanes as well as for pedestrians using adjacent sidewalks.

IRWD shall also notify local emergency responders of any planned partial or full lane closures required for project construction. Emergency responders include fire departments, police departments, and ambulances that have jurisdiction within the project area. Written notification and disclosure of lane closure location must be provided at least 30 days prior to the planned closure to allow emergency response providers adequate time to prepare for lane closures.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The SRIP FEIR identified that the SRIP is located within a moderate fire hazard severity zone (FHSZ) and is adjacent to areas mapped as a Very High FHSZ. The SRIP includes slopes surrounding the existing reservoir that are susceptible to prevailing winds. Brush and grassland habitats within the SRIP site are highly flammable. The primary fire hazards from SRIP construction would involve the use of vehicles and equipment. Heat or sparks from construction vehicles and equipment could ignite dry vegetation and cause a fire. SRIP construction could increase the risk of exposure of people or structures to significant loss, injury, or death involving wildland fires, which would result in a potentially significant impact. However, all personnel on the SRIP site would have to comply with Public Resources Code (PRC) Sections 4427, 4428, 4431, and 4442, which include regulations relating to the handling of combustible fuels and equipment that can exacerbate fire risks. During construction, strict adherence to these PRC sections would ensure that contractors are responsible for all monitoring and safety measures ensuring that any risk to exacerbate wildfires would be reduced. Additionally, all construction must comply with fire protection and prevention requirements specified by the California Code of Regulations (CCR) and Cal/OSHA. This includes various measures such as easy accessibility of firefighting equipment, proper storage of combustible liquids, no smoking in service and refueling areas, and worker training for firefighter extinguisher use. Furthermore, implementation of Mitigation Measure WDF-1 would be required to ensure fire hazard reduction measures are implemented during SRIP activities to further reduce the potential for wildfire impacts on project workers. As a result, the potential impact would be reduced to a less than significant level with mitigation.

The SRIP Off-Site Mitigation would be constructed in marshlands and would not be located within a fire hazard severity zone (CAL FIRE 2023), resulting in a less than significant impact. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Hazards and Hazardous Materials

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to hazards and hazardous materials. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

CAL FIRE, 2023. Very High Fire Hazard Severity Zones. Available at:
<https://osfm.fire.ca.gov/fire-hazard-severity-zone-maps-2022/>. Accessed December 5, 2023.

3.10 Hydrology and Water Quality

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No Impact</u>
X. HYDROLOGY AND WATER QUALITY — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:		
i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?**

The SRIP FEIR identified that the SRIP would include construction of access roads, clearing of vegetation and other ground disturbing activities to expand the reservoir and construct the proposed dam. These construction-related activities would result in large stockpiles of soils and would require the use of hazardous materials (e.g., fuels, oil, lubricants for equipment), both of which could be mobilized and transported offsite potentially degrading the water quality of nearby surface waters. However, the SRIP would be required to obtain coverage under the NPDES Construction General Permit, which would require the preparation and implementation of a SWPPP. The SWPPP would describe best management practices such as settlement basins, silt fences, and straw wattles to prevent sediment and other pollutants from leaving the work site and entering waterways. With compliance with the Construction General Permit, impacts relative to water quality during construction would be less than significant.

For operation, the SRIP would include a seepage control system to prevent erosion as required by the DSOD, an Emergency Action Plan (EAP) as required by the DSOD to manage discharge from

the reservoir in the event of an emergency, and various best management practices required by the Municipal Separate Storm Sewer System MS4 (i.e., regional stormwater permit) and Drainage Area Management Plan (DAMP) to manage outflow from the reservoir and prevent erosion of the dam as required by both the DSOD and the Regional Water Quality Control Board. With compliance with the existing regulations, impacts relative to water quality during operations would be less than significant.

The SRIP Off-Site Mitigation would be constructed on a portion of the San Joaquin Freshwater Marsh, as shown on **Figure 2**. Because the SRIP Off-Site Mitigation would disturb more than one acre, the contractor would be required to acquire coverage under the Construction General Permit. This permit would require the contractor to prepare and implement a SWPPP. The implementation of the best management practices described in the SWPPP would prevent sediment and other pollutants from leaving the construction areas. The SRIP Off-Site Mitigation would restore and improve the ecological function of the habitat by establishing a mix of riparian woodland and freshwater marsh habitat, which would include irrigation and short- and long-term maintenance to ensure its success. The restoration and improvement of vegetation of the habitat would create a properly functioning marsh that would retain sediment and prevent the migration of sediment and other pollutants into waterways. As a result, construction of the SRIP Off-Site Mitigation would result in a beneficial impact for water quality and would not alter the conclusions of the SRIP FEIR.

The water supply for the flow of water through the marsh and for irrigation to establish and maintain vegetation would be from water that has circulated through the San Joaquin Marsh ponds after being pumped from San Diego Creek. A conceptual design and feasibility study was conducted that included analyzing impacts to surface water quality in terms of the potential to increase salinity (more accurately quantified as changes in total dissolved solids [TDS]) in San Diego Creek or to accelerate saltwater intrusion due to reduced flows in San Diego Creek (ESA 2022).

Based on data from approximately 1998 to the present, TDS is and has always been naturally high, and the data show no upward trend in salts or TDS. In addition, the TDS of San Diego Creek is similar to other coastal streams in the area (e.g., Trabuco Creek, San Juan Creek, etc.). As a result, the SRIP Off-Site Mitigation would result in a less than significant impact for water quality and would not alter the conclusions of the SRIP FEIR.

The potential for saltwater intrusion could occur due to ocean water intruding into the aquifer beneath San Diego Creek or ocean water rising and entering San Diego Creek via the surface channel. Neither of these cases have occurred based on monitoring data collected by IRWD and Orange County Public Works. Although higher levels of salts, or more accurately TDS, are present in the creek, this is the result of natural conditions in the watershed. Saltwater from the ocean is primarily made up of sodium and chloride, while the TDS present in San Diego Creek is almost entirely comprised of magnesium and calcium, which are derived from the dissolution in soils in the local watershed.

The San Diego Creek drains into Upper Newport Bay, and further, the Pacific Ocean. Tides within the bay are not expected to extend upstream of Campus Drive based on a review of the weir elevation at Campus Drive. Downstream of Campus Drive, high tides may have a backwater effect on San Diego Creek water levels and may increase surface water salinity as observed by USFWS on October 7, 2020. This is likely due to the fact that San Diego Creek channel elevations are within the tide range downstream of Campus Drive and there is no weir downstream of Campus Drive to limit tidal influence. With up to 6.7 feet of sea level rise projected to occur in 2100 in the medium-high risk aversion scenario, tidal influence may extend upstream of Campus Drive during spring high tides, but tidal influence is less likely to extend above the next weir upstream, which is where the San Joaquin Marsh intake is located. The proposed diversion would occur only during the wet season, as discussed below in the analysis for impacts relative to erosion, is not expected to significantly increase tidal influence in San Diego Creek under existing conditions or future conditions with projected sea level rise, and would therefore not result in water quality impacts. As a result, the SRIP Off-Site Mitigation would result in a less than significant impact for water quality and would not alter the conclusions of the SRIP FEIR.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The SRIP FEIR identified that the SRIP would include temporarily emptying the reservoir, resulting in a temporary decrease in groundwater infiltration during this time. Impacts associated with construction dewatering would be negligible because the Syphon Canyon Basin is a relatively small portion of the greater Orange County Coastal Plain Groundwater Basin and dewatering during construction would not have a long-term effect with respect to groundwater levels or supplies. Therefore, impacts to groundwater supplies and recharge would be negligible and the impact would be less than significant during construction. Once construction is complete, the SRIP FEIR identified that the SRIP would result in an increase in the new reservoir's storage capacity and would provide for enhanced recharge to groundwater resources, consistent with strategies for sustainable management of groundwater. Thus, relative to groundwater supplies and sustainable management of the basin, the SRIP would result in a beneficial impact.

Irrigation water for the proposed SRIP Off-Site Mitigation would be supplied by surface water diverted from San Diego Creek; groundwater would not be used. This would result in surface water infiltration into the subsurface and thus increase groundwater recharge. The SRIP Off-Site Mitigation does not include the addition of impervious surfaces. Therefore, the SRIP Off-Site Mitigation would improve groundwater supplies and recharge. As a result, construction of the SRIP Off-Site Mitigation would result in a beneficial impact relative to groundwater supplies or recharge and would not alter the conclusions of the SRIP FEIR.

c.i) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: result in substantial erosion or siltation on- or off-site?

The SRIP FEIR identified that the SRIP would not significantly alter the existing drainage pattern of the project site during construction. Due to the bowl-shaped topography of the site and the SRIP's planned settlement basins and other required BMPs, drainage within the SRIP site area east of the existing and proposed dam would continue to flow into the reservoir basin, as it does now. In addition, the implementation of a SWPPP as discussed above in the analysis for impacts to water quality would prevent erosion and siltation during construction. Finally, compliance with the requirements of the MS4 and DAMP requirements would include design measures to prevent erosion and siltation. Once constructed, the drainage pattern of the SRIP would be substantially the same as the existing conditions. With compliance with the existing regulations, impacts relative to erosion or siltation during operations would be less than significant.

As discussed above in the analysis of impacts to water quality, because the SRIP Off-Site Mitigation, consisting of marsh restoration and the installation of an irrigation pipeline, would be part of the overall SRIP, the associated activities would be required to be included in the previously discussed SWPPP. The implementation of the best management practices described in the SWPPP would prevent erosion and siltation. In addition, the SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat. The restoration and improvement of vegetation of the habitat would in turn improve the ability of the marsh to retain sediment and reduce the potential for erosion and siltation into waterways. In addition, the marsh area is flat and not susceptible to erosion due to steep slopes. As a result, the operation of the SRIP Off-Site Mitigation would result in a beneficial impact relative to erosion and siltation and would not alter the conclusions of the SRIP FEIR.

As discussed in a technical memorandum prepared for the SRIP Off-Site Mitigation (ESA 2022), diversions from San Diego Creek to the proposed mitigation would occur only during the wet season between November and March to mimic the natural wetland hydrology. ESA estimated a total diversion and irrigation amount of approximately 41 to 61 million gallons per wet season based on estimated evapotranspiration. This is equivalent to a continuous diversion of 0.4 to 0.6 cfs between November 1 and March 31. However, the diversion is not expected to be a continuous action throughout the wet season; actual diversion would be timed with storm events. The diversions are planned to follow current IRWD practices for other riparian areas it maintains; during brief periods of between about 1 to 2 weeks after storm events in the wet season. Diversions to the mitigation site would not take place at the same time as diversions to other riparian habitat areas at San Joaquin Marsh.

ESA estimated the effect of the mitigation diversions for the average San Diego Creek flowrate during the diversion periods to assess impacts to channel habitat and vegetation and found the diversion would reduce the water surface in San Diego Creek on average by 0.2 feet under these wet season conditions (ESA 2022). This small reduction in water surface during the wet season

was determined to have a negligible impact on San Diego Creek conditions. The proposed diversions from San Diego Creek for the mitigation site will have a limited effect on erosion and sedimentation in San Diego Creek as the diversions will take place when creek flows are naturally receding and after high creek flows of the storm to avoid diverting sediment laden water. As a result, the operation of the SRIP Off-Site Mitigation would have no measurable effect on the beneficial uses in the San Diego Creek. As discussed in Section 3.4, *Biological Resources*, there would be no impact to riparian habitat within San Diego Creek due to seasonal drawdown, thus no special-status species, riparian vegetation, or jurisdictional resources would be affected. Therefore, the SRIP Off-Site Mitigation would result in a less than significant impact relative to erosion and siltation and would not alter the conclusions of the SRIP FEIR.

c.ii) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

As discussed in the SRIP FEIR and above in the analysis for impacts to water quality, groundwater supplies, recharge, and erosion and siltation, compliance with the NPDES Construction General Permit with its required implementation of a SWPPP and compliance with the design requirements of the MS4 and DAMP would prevent stormwater runoff that could cause flooding for the SRIP. With compliance with the existing regulations, impacts relative to erosion or siltation during operations would be less than significant.

As discussed above in the analysis for impacts to water quality, the SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat and ensuring its establishment through short- and long-term maintenance. The SRIP Off-Site Mitigation would include the construction of channels and berms to manage surface water flow within the area, designed to provide water throughout the marsh area, while preventing flooding. As a result, construction of the SRIP Off-Site Mitigation would result in a less than significant impact relative to flooding and would not alter the conclusions of the SRIP FEIR.

c.iii) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As discussed in the SRIP FEIR and above in the analyses for water quality, groundwater supplies, recharge, and erosion, compliance with the design requirements of the MS4 and DAMP would prevent runoff that could exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. With compliance with the existing regulations, impacts relative to stormwater drainage systems or additional sources of polluted runoff during operations would be less than significant.

As discussed above in the analysis of impacts to water quality, the SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation would include the construction of channels and berms to manage flow within the area, designed to manage the anticipated flow of water through the riparian and wetlands habitat. In addition, the restoration of vegetation in this habitat would improve the ability of this habitat to retain sediment and reduce runoff polluted with sediment. As a result, construction of the SRIP Off-Site Mitigation would result in a beneficial impact relative to drainage systems and would not alter the conclusions of the SRIP FEIR.

c.iv) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: impede or redirect flood flows?

As discussed in the SRIP FEIR and above in the analyses for erosion and siltation, the reservoir is bowl-shaped and stormwater falling within the reservoir would be retained. Compliance with the design requirements of the MS4 and DAMP would manage surface water flow outside of the reservoir and would prevent runoff that could impede or redirect flood flows. With compliance with the existing regulations, impacts relative to flood flows would be less than significant.

As discussed above in the analysis for impacts relative to water quality, the SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation would include the construction of channels and berms to manage surface water flow within the riparian and wetlands habitat and would be designed to prevent flooding. Additionally, the SRIP Off-Site Mitigation would result in the equivalent of a continuous diversion of 0.4 to 0.6 cfs only during the wet season between November 1 and March 31. This controlled diversion would not result in flood flows. As a result, construction of the SRIP Off-Site Mitigation would result in a less than significant impact relative to flood flows and would not alter the conclusions of the SRIP FEIR.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The SRIP FEIR found that the SRIP site is not located in an area subject to tsunamis, resulting in no impact. Impacts relative to the release of pollutants associated with flood hazards are analyzed above in the analyses for surface runoff and flooding, which concluded a less than significant impact. The new engineered dam and reservoir would meet or exceed the current safety and design requirements established by the DSOD. With compliance with existing regulations for the design and operation of the dam, and adherence to the procedures in the Emergency Action Plan (EAP), the impacts relative to the release of pollutants during seiches and flooding due to breaches of the dam would be less than significant.

The SRIP Off-Site Mitigation is located 4 miles upstream from the ocean and would not be subject to tsunamis. Additionally, the San Diego Creek channel provides a barrier from the SRIP Off-Site Mitigation site to the San Diego Creek and would function to prevent any flood hazard

resulting from a seiche to access the SRIP Off-Site Mitigation site and subsequent release of pollutants. As discussed above in the analysis for impacts to water quality, the SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation would include the construction of channels and berms to manage surface water flow within the area, designed to prevent flooding of areas outside of the marsh. As a result, construction of the SRIP Off-Site Mitigation would result in a less than significant impact relative to flood hazards and would not alter the conclusions of the SRIP FEIR.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

For the SRIP, once operational, the new Syphon Reservoir would function as a closed system and would not interact with surface waters, eliminating any impact to surface waters. Thus, the SRIP would not conflict with the Water Quality Control Plan (also referred to as the Basin Plan) or a sustainable groundwater management plan. In addition, the proposed SRIP would reduce the flow of sediment and other pollutants in waterways, and would increase recharge to groundwater, which would be consistent with the goals of the Basin Plan, resulting in a beneficial impact.

The SRIP Off-Site Mitigation would be constructed on a portion of the San Joaquin Freshwater Marsh, as shown on **Figure 2**. Previous efforts to restore and improve the ecological function of this site were unsuccessful. The SRIP Off-Site Mitigation would restore and improve the ecological function of the riparian and wetland area by establishing a mix of riparian woodland and freshwater marsh habitat, which would include short- and long-term maintenance to ensure its success. As previously discussed, the restoration and improvement of vegetation of the habitat would in turn improve the ecological function of the riparian and wetlands habitat, which would improve the retention of sediment, reduce the migration of sediment and other pollutants into waterways, and would not reduce groundwater supplies or interfere with recharge. As a result, construction of the SRIP Off-Site Mitigation would result in a beneficial impact relative to the water quality control plan and sustainable groundwater management plan and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Hydrology and Water Quality

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to hydrology and water quality. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

ESA, 2022. *San Joaquin Marsh Wetland Mitigation Conceptual Design & Feasibility Study (Syphon Reservoir Project), Responses to U.S. Fish and Wildlife Service Questions*. April 22.

3.11 Land Use and Planning

<i>Issues (and Supporting Information Sources):</i>	Yes	No
XI. LAND USE AND PLANNING — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Physically divide an established community?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

a) Physically divide an established community?

The SRIP FEIR identified that the SRIP site would not construct any physical structures that would impact mobility within the surrounding community or remove a means of access. Therefore, the SRIP would result in no impact to the physical division of an established community.

The SRIP Off-Site Mitigation site would involve the establishment of a mix of riparian woodland and freshwater marsh habitat and does not propose development that would introduce new permanent employees or residents to the area. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to land use and planning compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The SRIP FEIR identified that pursuant to California Government Code (CGC) Section 53091, water supply facilities such as those associated with the SRIP site are exempt from building and zoning ordinances. The SRIP site is considered a water storage facility, thus, building ordinances of the County of Orange and City of Irvine, including the Orange County General Plan and the City of Irvine General plan and its policies do not apply to the SRIP site. Additionally, the SRIP does not propose development that would conflict with the Orange County General Plan, Orange County Zoning Code, the City of Irvine General Plan, or the City of Irvine Zoning Ordinance. The SRIP does not conflict with current land use regulations and therefore no impact would occur.

The SRIP Off-Site Mitigation site is zoned as Preservation by the City of Irvine (City of Irvine 2023). Pursuant to Section 3-37-5 of the City of Irvine Zoning Code, the Preservation District is intended to “provide protection and maintenance of natural resources in a natural state with little

or no modification.” The SRIP Off-Site Mitigation would include the establishment of a mix of riparian woodland and freshwater marsh habitat that would enhance the existing vegetation onsite. The SRIP Off-Site Mitigation would meet the intent of the existing Preservation zone by enhancing and maintaining the site’s natural habitat. The SRIP Off-Site Mitigation would result in similar impacts to current zoning and no mitigation would be required. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to zoning compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Land Use

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to land use. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

City of Irvine, Public Online Parcel Search, 2023. Available at:
<https://gis.cityofirvine.org/onlineparcel/>. Accessed, October 20, 2023.

3.12 Mineral Resources

<i>Issues (and Supporting Information Sources):</i>	Yes	No
XII. MINERAL RESOURCES — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The SRIP FEIR identified that the SRIP site is not a known mineral resource area and does not have a history of mineral extraction uses (USGS 2023). Additionally, according to the State of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, no oil wells exist on the SRIP site (CDOC 2023). Therefore, impacts would not occur to the loss of availability of a known mineral resource.

The SRIP Off-Site Mitigation site is not identified as a known mineral resource area and does not have a history of mineral resource extraction uses (USGS 2023). The SRIP Off-Site Mitigation site is not within a mineral resource area based on the Orange County General Plan (Orange County 2023). Additionally, no oil wells exist on the SRIP Off-Site Mitigation site (CDOC 2023). Therefore, the SRIP Off-Site Mitigation would result in similar impacts to mineral resources compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The SRIP FEIR identified that the SRIP site was not identified as a mineral resource zone, according to the County of Orange. Therefore, construction of the SRIP FEIR would not result in the loss of a locally important mineral resource recovery site and no impacts would occur.

The SRIP Off-Site Mitigation site is not within a mineral resource area based on the Orange County General Plan (Orange County 2023). Additionally, the SRIP Off-Site Mitigation site is not identified as a known mineral resource area and does not have a history of mineral resource extraction uses (USGS 2023). Therefore, the SRIP Off-Site Mitigation would result in similar impacts to mineral resources compared with the conclusions in the SRIP FEIR. As a result,

construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Mineral Resources

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to mineral resources. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

United States Geological Survey (USGS), 2023. Mineral Resources Online Spatial Data. Available at: <https://mrdata.usgs.gov/general/map-us.html>. Accessed October 20, 2023.

California Department of Conservation (CDC), 2023. Well Finder. Available at <https://www.conservation.ca.gov/calgem/Pages/Wellfinder.aspx>. Accessed October 20, 2023.

County of Orange, 2023. Resources Element, Mineral Resources Figure VI-5. Available at <https://ocds.ocpublicworks.com/sites/ocpwoocds/files/import/data/files/8625.pdf>. Accessed October 20, 2023.

3.13 Noise

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
XIII. NOISE — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Generate excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) **Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

The SRIP FEIR identified that the SRIP would require the use of construction equipment for a temporary period of time. As discussed in the SRIP FEIR, noise from construction activities would be generated by the operation of vehicles and equipment used for various construction activities, such as excavation and grading. Noise levels generated by construction equipment would vary depending on factors such as the type and number of equipment and the construction activities being performed. Noise levels at noise-sensitive receptor locations would also depend on the distance from the construction activities to the receptor location, as well as the presence of intervening terrain, vegetation, buildings, or other structures that would absorb or block the transmission of noise. Noise-sensitive receptors would be located approximately 55 feet from the SRIP site (Crean Lutheran High School Athletic Complex), approximately 180 feet from the access road construction and approximately 700 feet from the dam, reservoir and treatment facilities (residential uses). The SRIP FEIR determined that the SRIP would comply with the City of Irvine Municipal Code, Section 6-8-205, which restricts construction to between the allowed hours of 7 a.m. to 7 p.m. Mondays through Fridays, and 9 a.m. to 6 p.m. on Saturdays. As such, construction activities would comply with the City's noise standard and would not result in significant impacts to nearby sensitive receptors. Impacts were found to be less than significant.

The SRIP FEIR determined that the operational activities associated with the SRIP would not increase the ADT volumes along the major thoroughfares within the project vicinity. Additionally, the proposed inlet and outlet pipelines that would supply and drain the reservoir would be located underground and would not result in any operational noise. Furthermore, small pumps located on the site within the proposed treatment facilities would be house inside a

masonry block wall building, which would block the transmission of noise and would not generate noise above ambient conditions at sensitive receptor property lines. Therefore, impacts from the operations of the SRIP would be less than significant.

The nearest noise sensitive uses to the SRIP Off-Site Mitigation site are student dormitories associated with the University of California, Irvine approximately 700 feet to the southeast of the site. The SRIP Off-Site Mitigation would require the use of generally similar types of construction equipment as the SRIP. However, the nearest noise-sensitive receptors would be located substantially further away. Therefore, construction noise levels at noise-sensitive receptors would be substantially lower than analyzed in the SRIP FEIR. Additionally, the SRIP Off-Site Mitigation would generate substantially fewer daily truck trips and worker trips than the maximum analyzed in SRIP FEIR (see SRIP FEIR, Appendix D, Noise and Vibration Technical Report, March 2021). Peak hour combined vehicle and truck trips for the SRIP Off-Site Mitigation would be approximately 15 to 20 truck trips (i.e., 120 daily trips occurring over 6 to 8 hours) and 14 worker trips (i.e., workers arriving at the start of the work day or departing at the end of the work day) compared to the peak volume analyzed in the SRIP FEIR of 168 peak hour truck trips and 156 peak hour automobile trips (see SRIP FEIR, Appendix D, Noise and Vibration Technical Report, March 2021). Thus, the SRIP Off-Site Mitigation contribution to construction traffic would not substantially contribute to traffic noise levels. Furthermore, the SRIP Off-Site Mitigation would comply with the City Municipal Code, Section 6-8-205, which restricts construction to between the allowed hours of 7 a.m. to 7 p.m. Mondays through Fridays, and 9 a.m. to 6 p.m. on Saturdays. Additionally, the SRIP Off-Site Mitigation is located more than seven miles from the SRIP; thus, due to the substantial separation distance, construction activity and equipment noise from the SRIP Off-Site Mitigation would not combine with the SRIP and result in adverse impacts at the same sensitive receptors.

Operation of the SRIP Off-Site Mitigation would require annual inspections, routine checks of the water supply pipeline, irrigation of the freshwater marsh, plant care and replacement as needed, and other maintenance such as erosion control and trash removal. It is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Off-Site Mitigation would not generate substantial numbers of vehicle trips nor require any substantially noisy activities and operational noise impacts would be similar or less than what was determined in the SRIP FEIR.

The SRIP Off-Site Mitigation would result in less than significant impacts with respect to a substantial temporary or permanent increase in ambient noise levels in the vicinity of the site in excess of standards and no mitigation would be required. Furthermore, as discussed above, noise sensitive uses are located substantially further away from the SRIP Off-Site Mitigation site than the sensitive receptors near the SRIP site. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Generate excessive groundborne vibration or groundborne noise levels?

The SRIP FEIR identified that the SRIP would require the use of construction equipment for a temporary period of 41 months. As discussed in the SRIP FEIR, construction activities have the potential to generate low levels of groundborne vibration and groundborne noise from the use of heavy equipment (i.e., backhoe, dozer, grader, loader, and haul trucks, etc.), which generates vibrations that propagate through the ground and diminish in intensity with distance from the source. No high-impact activities, such as pile driving or blasting, would be used during construction. The SRIP FEIR determined that construction would not exceed the significance thresholds for groundborne vibration that would cause structural (i.e., building) damage or human annoyance in occupied buildings as a result of separation distance from construction areas to receptor locations. Operation of the SRIP would not result in new sources of groundborne vibration and groundborne noise compared to existing conditions. Thus, construction and operational groundborne vibration impacts would be less than significant.

The SRIP Off-Site Mitigation would require the use of generally similar types of construction equipment as the SRIP. The SRIP Off-Site Mitigation would also not result in new sources of groundborne vibration and groundborne noise compared to existing conditions. Furthermore, as discussed above, receptors are located substantially further away from the SRIP Off-Site Mitigation site than the sensitive receptors near the SRIP site. Therefore, the SRIP Off-Site Mitigation would result in less than significant impacts with respect to excessive groundborne vibration or groundborne noise levels and no mitigation would be required. Furthermore, as discussed above, receptors are located substantially further away from the SRIP Off-Site Mitigation site than the sensitive receptors near the SRIP site. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to groundborne vibration or groundborne noise levels compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

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

The SRIP FEIR determined that the project area is not located within the vicinity of a private airstrip. Further, the nearest airport to the project area is the John Wayne Airport, located approximately 7.7 miles to the southwest of the project area. The SRIP is not located within an airport land use plan or within 2 miles of a public airport or public use airport. Therefore, the SRIP would have no impact related to public or private airport/airstrip noise levels.

The SRIP Off-Site Mitigation site is located approximately 1.3 miles to the southeast of John Wayne Airport. However, the SRIP Off-Site Mitigation site is not located within the John Wayne Airport 65 dBA Day-Night Noise Level (DNL) contour, which the Federal Aviation Administration (FAA) has adopted as the threshold of significance for airport noise exposure (below which residential land uses are compatible) (FAA 2022). The SRIP Off-Site Mitigation

site is also located outside of the John Wayne Airport 60 dBA DNL contour. The SRIP Off-Site Mitigation would result in less than significant impacts with respect to a private airstrip or an airport land use plan or public use airport and no mitigation would be required. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Noise

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to noise. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

Federal Aviation Administration, 2022. Airport Noise Compatibility Planning Information, John Wayne Airport, Orange County (SNA) Community Noise Equivalent Level Maps (2010-2021). https://files.ocair.com/media/2023-03/311880_JWA_2022_Annual_CNEL_Contour.pdf. Accessed November 6, 2023.

3.14 Population and Housing

<i>Issues (and Supporting Information Sources):</i>	Yes	No
XIV. POPULATION AND HOUSING — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

The SRIP FEIR identified that the implementation of the SRIP site would not have a direct growth inducement effect, as the SRIP does not propose development of new housing that would attract additional population to the area. Additionally, the SRIP would not introduce substantial permanent employment that could indirectly induce population growth in the City and in the region. Construction activities associated with the construction of the SRIP would introduce short-term construction employment opportunities and would not require persons outside of the Orange County workforce. Therefore, the SRIP would not directly induce substantial unplanned population growth and no impact would occur.

The SRIP Off-Site Mitigation does not propose development that would introduce new permanent employees or residents to the area. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to population compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

- b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

The SRIP FEIR identified that there are no existing residences within the project area and the SRIP would not displace existing housing. Therefore, the SRIP site would not displace people or housing necessitating the construction of replacement housing elsewhere and impacts would not occur.

The SRIP Off-Site Mitigation does not propose development that would introduce new permanent employees or residents to the area. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to existing people or housing compared with the conclusions in the SRIP FEIR.

As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Population and Housing

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to population and housing. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

3.15 Public Services

<i>Issues (and Supporting Information Sources):</i>	Yes	No
XV. PUBLIC SERVICES —		
a) Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts due to changed circumstances or new information for any of the following public services:		
i) Fire protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Police protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Schools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Parks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v) Other public facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts due to changed circumstances or new information for any of the following public services:

a.i) – a.v) Fire Protection, Police Protection, Schools, Parks, Other Public Facilities

Fire Protection

The SRIP was found to not introduce substantial permanent employment that would indirectly induce population growth in the City of Irvine and in the region. Construction activities associated with the SRIP would introduce short-term construction employment opportunities and would not require persons outside of the Orange County workforce. Therefore, the SRIP would not substantially increase the need for new fire department staff or new facilities.

The nearest fire station to the SRIP Off-Site Mitigation site is located at #2 California Avenue in Irvine, approximately 1.5 miles northwest (OCFA 2023). The SRIP Off-Site Mitigation does not propose development that would introduce new permanent employees or residents to the area and would result in no impact to fire protection. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to demands on fire protection services compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Police Protection

The SRIP would not introduce substantial housing and permanent employment that would indirectly induce population growth in the City of Irvine and in the region. Therefore, the SRIP would not require the expansion of new police stations to serve the SRIP site.

The nearest Irvine Police Department (IPD) station is located at 410 East Peltason Drive, approximately 1.2 miles southeast of the SRIP Off-Site Mitigation site. The SRIP Off-Site Mitigation does not propose development that would introduce new permanent employees or

residents to the area and would result in no impact to police protection services. Therefore, the SRIP Off-Site Mitigation would result in similar demands on police protection services compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Schools

The SRIP FEIR found that the SRIP would not introduce substantial housing and permanent employment that would indirectly induce population growth in the City of Irvine and in the region. Therefore, the SRIP would not exceed enrollment capacity of the Irvine Unified School District (IUSD) or require new or expanded school facilities.

The nearest school to the SRIP Off-Site Mitigation site is the University High School, located at 4771 Campus Drive in Irvine, approximately 1.7 miles northwest (IUSD 2023). The SRIP Off-Site Mitigation does not propose development that would introduce new permanent residents to the area. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to demands placed on schools compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Parks

The SRIP FEIR identified that the construction of the SRIP would not result in the construction of new public parks or require the alteration of existing public parks. Additionally, the SRIP would not introduce substantial housing and permanent employment that would indirectly induce population growth in the City of Irvine and in the region. Therefore, the SRIP would not require new parks to maintain service ratios and no impact would occur.

The SRIP Off-Site Mitigation does not propose the construction of new public parks or require the alteration of existing public parks. The nearest park to the SRIP Off-Site Mitigation site is the Rancho Senior Center Park, located at 3 Ethel Colen Way, approximately 1.15 miles northeast (City of Irvine 2023). The SRIP Off-Site Mitigation does not propose development that would introduce new permanent residents to the area and would not require new park facilities. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to demands placed on parks compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Other Public Facilities

The SRIP FEIR identified that the SRIP would not require or impact other additional public facilities. Additionally, the SRIP would not introduce substantial housing and permanent employment that would indirectly induce population growth in the City of Irvine and in the region. Therefore, the SRIP would not require construction of new public facilities and no impact would occur.

The SRIP Off-Site Mitigation would not require or impact other additional public facilities. The SRIP Off-Site Mitigation does not propose development that would introduce new permanent

residents to the area. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to demands placed on other public facilities compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Public Services

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to public services. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

City of Irvine, 2023. Interactive Park Map. Available at <https://www.cityofirvine.org/city-parks-facilities/interactive-park-map>. Accessed, October 23, 2023.

Irvine Unified School District (IUSD), 2023. School Locator. Available at: <https://iusd.org/schools>. Accessed, October 23, 2023.

Orange County Fire Authority (OCFA), 2023. Fire Stations. Available at: <https://ocfa.org/AboutUs/FireStations.aspx>. Accessed, October 23, 2023.

3.16 Recreation

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
XVI. RECREATION — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

The SRIP FEIR identified that the implementation of the SRIP site would not increase the use of existing neighborhood and regional parks or other recreational facilities. The SRIP FEIR would include passive recreational facilities, inclusive of a proposed walking trail installed east from the existing Highline Canal and would be located on ridges or other relatively gradual-sloped terrain. The walking trail would introduce local residents to the area and therefore increase the use of public parks in the vicinity of the SRIP site. The IRWD would moderate the use of the recreational trail at Syphon Reservoir by restricting entrance to daily or seasonal use, further reducing the potential for nearby public recreational facilities to be impacted. Therefore, the construction of the SRIP impacts related to physical deterioration or nearby recreational facilities was found to be less than significant.

The SRIP Mitigation would not introduce permanent housing or employment that would indirectly induce population growth in the City of Irvine, and would therefore not put an increased demand on nearby parks. Unlike the SRIP, the SRIP Off-Site Mitigation would not involve onsite recreational facilities. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to existing neighborhood and regional parks compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

- b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

The SRIP FEIR identified that the implementation of the SRIP site would involve implementation of a passive recreational trail in a manner that is compatible with the SRIP site. Specifically, the

SRIP FEIR would include a proposed walking trail installed east from the existing Highline Canal and would be located on ridges or other relatively gradual-sloped terrain. The walking trail would introduce local residents to the area and therefore increase the use of public parks in the vicinity of the SRIP site. The construction of the proposed trail would result in impacts to special-status species and sensitive natural communities that would be potentially significant. The SRIP FEIR was required to implement Mitigation Measures BIO-1 through BIO-6 to ensure that impacts to special-status species and natural communities would be reduced to less than significant levels. Additionally, the construction of the walking trail along the Highline Canal would occur in close proximity to a historic-period archeological site. The SRIP FEIR was required to implement Mitigation Measures CR-1 through CR-4 to ensure that construction activities are monitored and assessed for unanticipated discoveries and impacts to cultural resources would be reduced to a less than significant level with mitigation incorporated. Operation and maintenance of the SRIP proposed recreational facilities was found to have a less than significant impact with mitigation related to expansion of recreational facilities.

The SRIP Off-Site Mitigation would not introduce new development that would indirectly induce population growth in the City of Irvine. The SRIP Off-Site Mitigation would enhance riparian woodland and freshwater marsh habitat onsite and would therefore be a benefit to the surrounding environment. The SRIP Off-Site Mitigation does not propose recreational facilities or require the construction or expansion of recreational facilities. Therefore, implementation of the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to existing recreational facilities compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Recreation

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to recreation. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

3.17 Transportation

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
XVII. TRANSPORTATION — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The SRIP FEIR identified temporary and permanent vehicular trips associated with implementation of the SRIP that could impact a plan addressing the circulation system. Impacts during construction would involve temporary lane closures that could create delays and/or detours for bikers and pedestrians traveling nearby. With implementation Mitigation Measure TRA-1, which would require the preparation and implementation of a Traffic Control Plan, impacts would be reduced to a significant level. On any given day during construction of the SRIP, between 10 and 46 workers would be required onsite for construction of the SRIP. Peak construction trip generation would be up to 232 daily construction vehicle trips. During operation of the SRIP FEIR, maintenance of the proposed wetland/riparian area would require operational vehicle trips during the first five years of 12 to 24 round trips for 30 to 40 days per year. The increased traffic volume that would result from operating the SRIP was found to have a nominal impact on local circulation system performance and impacts during operation were found to be less than significant.

The SRIP Off-Site Mitigation could involve temporary lane closures on Campus Drive or Riparian View that could create delays and/or detours for vehicles, bikers and pedestrians traveling nearby. The SRIP Off-Site Mitigation would be required to implement Mitigation Measure TRA-1 from the SRIP EIR that would involve the preparation and implementation of a Traffic Control Plan, which would reduce impacts to a less than significant level. Approximately 30 to 50 haul truck trips (15 to 25 inbound trips and 15 to 25 outbound trips) per day would be required over the one-month site preparation phase with approximately 5 workers per day. Up to approximately 120 haul truck trips (60 inbound trips and 60 outbound trips) per day would be required over the three-month site grading phase with approximately 14 workers per day. Up to approximately 8 haul truck trips (4 inbound trips and 4 outbound trips) would be required per day

over the three-month duration with approximately 6 to 12 workers per day. The SRIP Off-Site Mitigation could require plants and other materials to be transported to the site resulting in approximately 90 total truck trips to/from the SRIP Off-Site Mitigation site, resulting in less than 5 trips on any given day. A total of up to 6 to 20 workers would be needed per day for construction activities associated with site vegetation planting. The increased traffic volume that would result from constructing the SRIP would have a nominal impact on local circulation system performance, and would be far fewer than the peak daily trips required during construction of the SRIP. Additionally, the SRIP Off-Site Mitigation is located far enough away from the SRIP that construction trips would not combine together to create a greater impact than identified in the SRIP FEIR. The SRIP Off-Site Mitigation would result in less than significant impacts to traffic circulation with implementation of Mitigation Measure TRA-1.

Operation of the SRIP Off-Site Mitigation would require annual inspections, routine checks of the water supply pipeline, irrigation of the freshwater marsh, plant care and replacement as needed, and other maintenance such as erosion control and trash removal. It is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized. Thus, operation of the SRIP Off-Site Mitigation would not generate substantial numbers of vehicle trips and impacts would be less than significant.

Therefore, the SRIP Off-Site Mitigation would result in similar impacts to traffic circulation during construction and operation compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Mitigation Measures from the 2021 SRIP FEIR

TRA-1: Traffic Control Plan. Prior to the start of construction, IRWD shall require the construction contractor to prepare and have approved a Traffic Control Plan. The Traffic Control Plan will show all signage, striping, delineated detours, flagging operations, and any other devices that will be used during installation of the improvements ~~at the intersection of Sand Canyon Avenue and Portola Parkway~~ to guide motorists, bicyclists, and pedestrians safely through the construction area and allow for adequate access and circulation to the satisfaction of the City of Irvine, as applicable. The Traffic Control Plan shall be prepared in accordance with the City of Irvine's traffic control guidelines and will be prepared to ensure that emergency access will not be restricted. Additionally, the Traffic Control Plan will ensure that congestion and traffic delays are not substantially increased as a result of the construction activities. Further, the Traffic Control Plan will include detours or alternative routes for bicyclists using on-street bicycle lanes as well as for pedestrians using adjacent sidewalks.

IRWD shall also notify local emergency responders of any planned partial or full lane closures required for project construction. Emergency responders include fire departments, police departments, and ambulances that have jurisdiction within the project area. Written notification and disclosure of lane closure location must be provided at least 30 days prior to the planned closure to allow emergency response providers adequate time to prepare for lane closures.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The SRIP FEIR determined that all phases of construction and operation would generate fewer than 250 daily weekday trips. Screening criteria in the City of Irvine's adopted *CEQA VMT Impact Analysis Guidelines* exclude projects generating fewer than 250 weekday daily trips from further VMT impact analysis. Therefore, it was determined that construction of the SRIP would meet the City of Irvine's daily trip screening threshold, and the SRIP requires no further VMT impact analysis and impacts are considered less than significant.

The SRIP Off-Site Mitigation would generate up to 120 daily haul trips during the three-month site grading phase and nominal trips during construction, which is fewer than the 250 daily weekday trips included in the City of Irvine's adopted *CEQA VMT Impact Analysis Guidelines* screening criteria. Therefore, it was determined that construction of the SRIP Off-Site Mitigation would require no further VMT impact analysis and impacts are considered less than significant. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to traffic circulation during construction and operation compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The SRIP FEIR included access improvements that modified the turn lane geometry and added a traffic signal at the intersection of Sand Canyon Avenue and Portola Parkway. The SRIP FEIR analysis evaluated the proposed intersection improvements for consistency with the City of Irvine Transportation Design Procedures' (TDP) recommended design features for left-turn lane pocket lengths (TDP 1), driveway lengths (TDP 14), and vehicle stacking and gate-stacking at project sites, and concluded that proposed lane and signal changes would be implemented in a manner that is consistent with City of Irvine traffic control regulations to ensure that intersection modifications do not create additional hazards impacts for vehicles traveling on the northbound, eastbound, or westbound roadways. Impacts were found to be less than significant.

The SRIP Off-Site Mitigation would not include any increase in traffic hazards due to roadway designs or features. As a result, no impact would occur. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts to traffic hazards compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Result in inadequate emergency access?

The SRIP PEIR identified that while the SRIP would not involve closure of any roadways, temporary lane closures could interfere with emergency access. To ensure that impacts related to emergency access do not occur as a result of the SRIP, Mitigation Measure TRA-1 would be required, which would involve coordination with emergency responders, including fire departments, police departments, and ambulances that have jurisdiction in the SRIP area. The mitigation measure also requires that IRWD notify emergency responders of any partial or full

lane closures at least 30 days prior to impacts. With implementation of Mitigation Measure TRA-1, impacts were reduced to a less than significant level. Due to the relatively limited amount of vehicle trips associated with operation and maintenance of the SRIP, trips would not interfere with emergency access and impacts would be less than significant.

The SRIP Off-Site Mitigation could involve temporary lane closures on Campus Drive or Riparian View that could interfere with emergency access. The SRIP Off-Site Mitigation would be required to implement Mitigation Measure TRA-1 from the SRIP EIR that would involve the preparation and implementation of a Traffic Control Plan, which would reduce impacts to a less than significant level. Due to the relatively limited amount of vehicle trips associated with operation and maintenance of the SRIP Off-Site Mitigation, trips would not interfere with emergency access and impacts would be less than significant. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to emergency access during construction and operation compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Transportation

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to transportation. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

3.18 Tribal Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	Yes	No
<p>XVIII. TRIBAL CULTURAL RESOURCES — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:</p>		
<p>a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:</p>		
<p>i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a.i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)**
- a.ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

While preparing the EIR, IRWD engaged in a consultation process with the Gabrieleno Band of Mission Indians - Kizh Nation and other tribal entities pursuant to Public Resources Code section 21080.3.1. No parties objected to the adequacy of the consultation process or the adequacy of adopted mitigation measures prior to the close of the public hearing in July 2021. IRWD has complied with all applicable tribal consultation requirements (see Public Resources Code § 21080.3.1).

As part of the SRIP Off-Site Mitigation, the Native American Heritage Commission (NAHC) was contacted on August 31, 2023, to request a search of the Sacred Lands File (SLF). The NAHC responded to the request in a letter dated October 16, 2023, indicating that the results were positive. The letter did not provide details on the resources identified, but recommended that the Juaneño Band of Mission Indians and the Juaneño Band of Mission Indians Acjachemen Nation – Belardes be contacted for additional information. Consistent with this recommendation, on

November 29, 2023, IRWD sent letters to the Native American tribes identified by the NAHC (and to those tribes who were included in previous Assembly Bill 52 consultations in 2019 for the SRIP FEIR, including Kizh Nation).

In response to IRWD's November 29, 2023 letter to the Gabrieleno Band of Mission Indians - Kizh Nation providing notice that IRWD intended to carry out off-site mitigation for the SRIP, the Gabrieleno Band of Mission Indians - Kizh Nation provided a response on December 12, 2023, requesting new tribal and cultural mitigation measures be adopted for the entire SRIP, even though the EIR had been certified (and mitigation measures approved) nearly 2 ½ years earlier. On January 24, 2024, the Gabrieleno Band of Mission Indians - Kizh Nation sent a follow-up letter objecting to the tribal and cultural mitigation measures in the FEIR that was certified in July 2021. That same week, IRWD and its legal counsel reached out to the Kizh Nation to set up a meeting to discuss the Gabrieleno Band of Mission Indians - Kizh Nation's concerns. No response was received. IRWD and its legal counsel reached out several more times, including on July 1, 2024, with the intent to set up a meeting to discuss their concerns. The Gabrieleno Band of Mission Indians - Kizh Nation was non-responsive to these efforts. No other responses have been received to IRWD's November 29, 2023 letters. No known tribal cultural resources have been identified in the SRIP Off-Site Mitigation site as a result of Native American consultation efforts.

The archival research and pedestrian survey indicate that there is a moderate to high potential for yielding buried prehistoric archaeological resources at the SRIP Off-Site Mitigation that may be of significance to a California Native American tribe. The moderate to high potential is based on the fact that the SRIP Off-Site Mitigation site contains soils (young axial-channel deposits) that are contemporaneous with the period for which there is widely accepted evidence for human occupation of Southern California. The SRIP Off-Site Mitigation site was also once located within a marsh and in close proximity to Sand Canyon Wash, marshes, and approximately one mile away from Newport Bay. These bodies of water and marshes could have provided fresh water and food sources to prehistoric inhabitants. This moderate to high potential is further supported by the archival research that indicates the presence of several prehistoric archaeological sites consisting of shell middens, human burials and associated artifacts and ecofacts within the 0.50-mile radius of the SRIP Off-Site Mitigation site. This demonstrates that Native Americans once inhabited or were active in the area of the SRIP Off-Site Mitigation site. As a result, impacts are considered potentially significant to tribal cultural resources. Mitigation Measures CR-2, CR-3, and CR-4 would be required, which involve worker sensitivity training, construction monitoring, and protocols for unanticipated discoveries. With implementation of Mitigation Measures CR-2, CR-3, and CR-4 from the SRIP FEIR, impacts to tribal cultural resources would be reduced to a less than significant level.⁴

Mitigation Measures from the 2021 SRIP FEIR

CR-2: Worker Sensitivity Training. Prior to the start of construction activities, all construction personnel should be trained to identify the types of cultural resources that may be encountered during project implementation. These include both prehistoric and historic period archaeological resources. In addition to cultural resources recognition, the training should convey procedures to follow in the event of a potential cultural resources

⁴ IRWD has complied with all applicable tribal consultation requirements (see Public Resources Code § 21080.3.1).

discovery, including notification procedures. The training should be provided by the Qualified Archaeologist or an archaeologist working under their supervision.

CR-3: Construction Monitoring. An archaeological monitor (working under the direct supervision of the Qualified Archaeologist) shall observe all ground-disturbing activities, including but not limited to brush clearance, vegetation removal, grubbing, grading, and excavation, in undisturbed areas of the project site. In addition, the Qualified Archaeologist, in coordination with IRWD, may reduce or discontinue monitoring if it is determined that the possibility of encountering buried archaeological deposits is low based on observations of soil stratigraphy or other factors. Archaeological monitoring shall be conducted by an archaeologist familiar with the types of archaeological resources that could be encountered within the project site. The archaeological monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of a discovery until the Qualified Archaeologist has evaluated the discovery, consulted with IRWD, and determined appropriate treatment (as prescribed in CR-3). The archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the Qualified Archaeologist shall prepare a monitoring report that details the results of monitoring. The report shall be submitted to IRWD and any Native American groups who request a copy. The Qualified Archaeologist shall submit a copy of the final report to the California Historic Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC).

In addition, prior to the commencement of earthwork activities, IRWD shall provide written notification to the Native American representatives from the Gabrieleno Band of Mission Indians - Kizh Nation indicating the date and time of the commencement of earthwork activities. The representatives from the Gabrieleno Band of Mission Indians - Kizh Nation (“tribal representative”) shall be provided reasonable access to the project site in a manner that does not interfere with the earthwork activities. Tribal representatives, at their own expense, and in a manner that does not interfere with earthwork activities, shall be allowed to monitor subsurface ground-disturbing construction activities. The monitoring may consist of either direct observation of the earthwork activities or the examination of the excavated soils prior to disposal for evidence of cultural resources. If any cultural resources are identified during the monitoring and evidence is presented that the discovery proves to be potentially significant under CEQA, as determined by IRWD’s consulting Qualified Archaeologist, additional measures such as data recovery excavation, avoidance of the area of the find, documentation, testing, data recovery, reburial, archival review and/or transfer to the appropriate museum or educational institution, or other appropriate actions may be warranted as recommended by IRWD’s consulting Qualified Archeologist in consultation with the tribal representative.

CR-4: Protocols for Unanticipated Discoveries. If cultural resources are encountered during project implementation, all activity within 50 feet of the find should cease until the find can be evaluated by the Qualified Archaeologist. If the Qualified Archaeologist determines that the resources may be significant, he or she will notify IRWD and develop an appropriate treatment plan for the resource. IRWD should consult with the Native American monitor or other appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Under CEQA, preservation in place is the preferred manner of mitigating impacts to archaeological sites. In considering any suggested measures proposed by the archaeologist to mitigate impacts to archaeological resources, IRWD will

determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures will be instituted, which could include, among other options, detailed documentation, or data recovery excavation. Work may proceed on other parts of the project area while mitigation for cultural resources is being carried out.

Summary of Potential Effects on Tribal Cultural Resources

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to tribal resources. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

3.19 Utilities and Service Systems

<u>Issues (and Supporting Information Sources):</u>	<u>Yes</u>	<u>No</u>
XIX. UTILITIES AND SERVICE SYSTEMS — Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

The SRIP FEIR identified that the SRIP would result in an expanded water storage facility (dam, pipelines, treatment and disinfection, etc.) to operate the expanded reservoir. The SRIP FEIR found that no new water facilities, electric power, natural gas, or telecommunication facilities would be required other than those analyzed throughout the SRIP FEIR. Therefore, the implementation of the SRIP would not require the relocation of any of the existing infrastructure and no impacts would occur.

The SRIP Off-Site Mitigation would not require the addition or relocation of wastewater, natural gas, or telecommunication facilities. The water supply pipeline to be installed within Campus Drive would cross an existing 12-inch water main and 6-inch high pressure gas line, and the San Joaquin Marsh Trail Pipeline Option would cross an AT&T telecommunication line. IRWD would coordinate with all applicable utilities to ensure existing utilities are accommodated during construction. Regarding electric power, the SRIP Off-Site Mitigation would require minimal electricity for temporary lighting, equipment, and construction trailers. The electricity demand would be supplied from an existing line along Campus Drive, and only a small connection would be needed to the SRIP Off-Site Mitigation site. Regarding water supply and infrastructure,

irrigation water would be delivered via a new 12-inch water supply pipeline that would convey water from the existing IRWD San Joaquin Marsh pump station. Water would be through IRWD's existing riparian water right from the San Diego Creek. The new water supply infrastructure required as part of the SRIP Off-Site Mitigation has been analyzed throughout this Addendum and has been shown to not result in significant environmental effects. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to the relocation or construction of new or expanded utilities compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

The SRIP FEIR identified that the SRIP would increase storage of recycled water, which would be beneficially used within IRWD's service area instead of portable water, reducing dependency on costly, imported water and maintaining operational efficiency at IRWD's water recycling plants. No new water supplies or entitlements would be required to serve the SRIP itself. Therefore, no impacts would occur related to water supplies.

The SRIP Off-Site Mitigation would provide irrigation water that would be delivered via a new 12-inch water supply pipeline that would convey water from the San Diego Creek via the existing IRWD San Joaquin Marsh pump station. The SRIP Off-Site Mitigation would operate within the limits of IRWD's riparian water rights from the San Diego Creek and would not require new water supplies or entitlements. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to water supply compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The SRIP FEIR identified that the SRIP would not generate wastewater associated with construction such as temporary use of portable facilities. Once construction activities are completed, portable facilities would be removed, and the wastewater properly handled and disposed of in accordance with all applicable laws and regulations. Therefore, no impacts would occur related to wastewater treatment capacity.

The SRIP Off-Site Mitigation is a habitat restoration project and does not propose new development that would generate a substantial need for wastewater facilities. During construction, the SRIP Off-Site Mitigation site would provide temporary use of portable facilities. Once construction activities are completed, portable facilities would be removed, and the wastewater properly handled and disposed of in accordance with all applicable laws and regulations. No wastewater would be generated during operation. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to wastewater treatment capacity compared with the

conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The SRIP FEIR identified that implementation of the SRIP will result in construction debris from demolition of the existing dam and construction and contouring of the new reservoir bottom. Construction related debris would require disposal at regional landfills serving the SRIP area. The SRIP FEIR found three permitted Class III landfills in Orange County available to access waste. The Frank R. Bowerman Landfill, located adjacent to the SRIP site with a remaining capacity through the year 2053. Once the tonnage limit of 11,500 tons per day is reached at that landfill, waste would be diverted to either the Olinda Landfill or the Prima Deshecha Landfill, both located in Orange County. Thus, the SRIP would be served by landfills with sufficient permitted capacity to accommodate the project's solid waste disposal needs and no impact would occur.

The SRIP Off-Site Mitigation would prepare the site by clearing and grubbing of the area. Approximately 12,000 to 18,000 cubic yards of grubbed material would be removed and disposed of as greenwaste. The nearest facility to the SRIP Off-Site Mitigation site is the Tierra Verde Industries EcoCentre in Irvine, located approximately 8.5 miles northeast of the SRIP Off-Site Mitigation site (CalRecycle 2023a). The Tierra Verde Industries EcoCentre has an existing capacity of 1,890 tons per day (CalRecycle 2023b). Once the tonnage limit of 3,000 tons per day is reached at the composting facility, waste would be diverted to either Rainbow Environmental Services, located approximately 11.5 miles northwest, or Bee Canyon Greenery, located approximately 14.2 miles northeast from the SRIP Off-Site Mitigation site, both located in Orange County. Thus, the SRIP Off-Site Mitigation would be served by landfills with sufficient permitted capacity to accommodate the SRIP Off-Site Mitigation's solid waste disposal needs and no impact would occur. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to solid waste compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The SRIP FEIR identified that the SRIP would result in nominal solid waste. Statewide policies regarding solid waste have become progressively more stringent, reflecting Assembly Bill (AB) 939, which required local government to develop waste reduction and recycling policies by the SRIP. IRWD would be required to comply with all laws and regulations related to the disposal and recycling of waste and for disposal of any hazardous materials resulting from demolition of the dam and the strainer and disinfection facilities. Therefore, no impact would occur.

The SRIP Off-Site Mitigation would generate approximately 12,000 to 18,000 cubic yards of greenwaste. The SRIP Off-Site Mitigation would comply with all federal, state, and local regulations including AB 939 and therefore no impact would occur. Therefore, the SRIP Off-Site

Mitigation would result in similar impacts to federal, state, and local regulations compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Utilities and Service Systems

The proposed modifications will not result in new significant environmental effects or result in a substantial increase in the severity of previously identified significant effects, with respect to utilities and service systems. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

California Department of Resources Recycling and Recovery (CalRecycle), 2023a. SWIS Facility/Site Activity Search. Available at:
<https://www2.calrecycle.ca.gov/SolidWaste/Activity>. Accessed November 8, 2023.

CalRecycle, 2-23b. SWIS Facility/Site Activity Details, Tierra Verde Industries EcoCentre. Available at:
<https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4655?siteID=4670>. Accessed November 8, 2023.

3.20 Wildfire

<i>Issues (and Supporting Information Sources):</i>	Yes	No
XX. WILDFIRE — If located in or near state responsibility areas or land classified as very high fire hazard severity zones, would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:		
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Would project modifications, changed circumstances, or new information substantially increase the severity of significant impacts identified in the previous CEQA document or result in new significant impacts that could:

- a) **Substantially impair an adopted emergency response plan or emergency evacuation plan?**

The Evacuation Plan for the City of Irvine identified Portola Parkway to the west and SR-133 to the southeast as two evacuation routes. Construction of the SRIP would involve intersection improvements at the Portola Parkway/Sand Canyon Avenue intersection and would not involve closure of any roadways; however, temporary lane closures could be required. The SRIP FEIR was required to implement Mitigation Measure TRA-1 to require the preparation and implementation of a Traffic Control Plan. The Traffic Control Plan would include, but not be limited to, signage, striping, delineated detours, flagging operations, changeable message signs, delineators, arrow boards, and K-Rails that would be used during construction to guide motorists, bicyclists, and pedestrians safely through the construction area and allow for adequate emergency access and circulation to the satisfaction of the City of Irvine. Therefore, with implementation of Mitigation Measure TRA-1, impacts to a circulation system during construction would be less than significant with respect to emergency response teams or an evacuation plan. Once construction is complete, intersection improvements at Portola Parkway/Sand Canyon Avenue would provide access for operation and maintenance vehicles onto IRWD property. Thus, operation of the SRIP would not result in impacts on emergency response plans or emergency evacuation plans.

According to the City of Irvine Evacuation Plan, the SRIP Off-Site Mitigation site is not within an Evacuation Zone (City of Irvine 2023). The closest Evacuation Zones to the SRIP Off-Site Mitigation site are the San Joaquin Marsh 23 zone, located directly adjacent to the northeast of the mitigation site across Campus Drive, and University Town Center 24B, located northeast of

the mitigation site across the intersection of Campus Drive and University Drive. Additionally, the Evacuation Plan for the City of Irvine identifies Campus Drive and University Drive as two evacuation routes (City of Irvine 2023). The SRIP Off-Site Mitigation could involve temporary lane closures on Campus Drive or Riparian View that could interfere with emergency access. The SRIP Off-Site Mitigation would be required to implement Mitigation Measure TRA-1 from the SRIP EIR that would involve the preparation and implementation of a Traffic Control Plan, which would reduce impacts to a less than significant level. Due to the relatively limited amount of vehicle trips associated with operation and maintenance of the SRIP Off-Site Mitigation, trips would not interfere with emergency access and impacts would be less than significant. Therefore, the SRIP Off-Site Mitigation would result in similar impacts to emergency access during construction and operation compared with the conclusions in the SRIP FEIR. As a result, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The SRIP FEIR identified that the SRIP site is within a State Responsibility Area, Moderate Fire Hazard Severity Zone, includes slopes surrounding the existing reservoir that are susceptible to prevailing winds, and brush and grasslands within the SRIP site are highly flammable. During construction, equipment and on-site diesel fuel could pose a risk to wildfire with possible ignition sources such as internal combustion engines, gasoline-powered tools, and equipment that could provide a spark, fire, or flame. The SRIP FEIR was required to comply with PRC Sections 4427, 4428, 4431, and 4442, which include regulations relating to the handling of combustible fuels and equipment that can exacerbate fire risks. Additionally, construction activities for the SRIP FEIR would comply with fire protection and prevention requirements specified by the CCR and Cal/OSHA. During operation, the SRIP would involve expansion of the existing reservoir water storage capacity and water levels would effectively create more inundated area and fewer steep slopes susceptible to prevailing winds within the SRIP area in winter and spring months when the reservoir is full. Operation related activities would involve a limited number of maintenance trucks for inspections and material delivery, which would utilize established access roads and would have low potential of producing uncontrolled spread of wildfire. The SRIP FEIR was required to implement Mitigation Measure WDF-1 which would ensure fire hazard reduction measures are implemented during SRIP activities to further reduce the potential for wildfire impacts on project workers.

The SRIP Off-Site Mitigation is not located within a State Responsibility Area, Moderate, High, or Very High Fire Hazard Severity Zone (CalFire 2023). The SRIP Off-Site Mitigation does not propose the construction of structures that would exacerbate wildfire risks or the uncontrolled spread of wildfires. The SRIP Off-Site Mitigation would involve use of equipment that could spark a fire under certain conditions, resulting in potential spread of wildland fires. As a result, implementation of the SRIP Mitigation would be required to implement Mitigation Measure WDF-1 from the SRIP EIR that would ensure fire hazard reduction measures are implemented to further reduce the potential for wildfire impacts on workers. Therefore, implementation of the

SRIP Off-Site Mitigation would result in similar impacts to potential wildfires or the uncontrolled spread of wildfires compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would result in a less than significant impact with mitigation and would not alter the conclusions of the SRIP FEIR.

Mitigation Measures from the 2021 SRIP FEIR

WDF-1: Fire Hazard Reduction Measures. During project implementation, IRWD shall require all spark arrestors on construction and maintenance equipment to be in good working order. Contractors shall require all vehicles and crews to have access to functional fire extinguishers at all times.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The SRIP FEIR identified that the SRIP site would include the construction and operation of new proposed access roads and pipelines to support the expanded dam and reservoir. The new infrastructure would not pose additional risk to exacerbate wildfires. All infrastructure installed as part of the SRIP FEIR during operation and maintenance would be required to implement fire reduction measures as outlined in Mitigation Measure WDF-1. Thus, impacts would be less than significant with mitigation.

Construction of the SRIP Off-Site Mitigation could pose a risk to wildfire with possible ignition sources such as internal combustion engines, gasoline-powered tools, and equipment that could provide a spark, fire, or flame. Irrigation water to supply the SRIP Off-Site Mitigation would be delivered via a new 12-inch water supply pipeline that would convey water from the existing IRWD San Joaquin Marsh pump station. The pipeline would be installed underground and would not exacerbate wildfire risk. The SRIP Off-Site Mitigation would require minimal electricity for temporary lighting, equipment, and construction trailers. The electricity demand would be supplied from an existing line along Campus Drive, and only a small connection would be needed to the SRIP Off-Site Mitigation site. The SRIP Off-Site Mitigation would be required to implement fire reduction measures as outlined in Mitigation Measure WDF-1. Therefore, implementation of the SRIP Off-Site Mitigation would result in similar impacts to the installation or maintenance of associated infrastructure that could exacerbate fire risk compared with the conclusions in the SRIP FEIR. As a result, construction and operation of the SRIP Off-Site Mitigation would result in a less than significant impact with mitigation and would not alter the conclusions of the SRIP FEIR.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

The SRIP FEIR identified that during construction, approximately 2.4 million cubic yards of material is proposed to be excavated from the SRIP site. These materials include topsoil, lake bottom sediments, alluvium, colluvium, slopewash, formational materials, as well as the existing

dam. Approximately 2.2 million cubic yards of compacted material would be reused onsite for construction of the new proposed dam. Site alteration through movement of substantial quantities of soil and earth materials has the potential to result in landslides as a result of runoff or drainage changes during construction. However, due to the bowl-shaped topography of the site and the planned sediment basins, erosion on site would extend beyond the boundaries of the site. The SRIP site would be required to comply with *NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002 as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit) and local stormwater ordinances. Once constructed, the SRIP would be designed to withstand a variety of site conditions to maintain capacity for the purpose of water storage. Specifically, the SRIP would incorporate slopes no steeper than 4H:1V (a ratio of 4 units of horizontal length to 1 unit of vertical height) to promote slope stability. The inclinations of the natural hillside slopes surrounding the reservoir are typically 4H:1V, and thus the inclination of cut slopes would be similar to that of the natural slopes. Therefore, the operation of the SRIP was found to not involve onsite personnel that could be put at risk should landslides or flooding occur as a result of wildland fires. Thus, the SRIP impacts on people or structures due to downslope or downstream flooding or landslides as a result of runoff were found to be less than significant.

The SRIP Off-Site Mitigation, unlike the SRIP Off-Site Mitigation site, is relatively flat and does not have slopes that could be susceptible to erosion from water. The SRIP Off-Site Mitigation would include reworking the interior of the area to create channels and berms and would therefore require excavation and soil movement, but because the site is relatively flat and not conducive to erosion, the risk from post fire runoff conditions is very low. Additionally, the restored vegetation would stabilize soil and prevent significant erosion. Therefore, the SRIP Off-Site Mitigation would not result in an increase in severity of impacts relative to post-fire slope or drainage compared with the conclusions in the SRIP FEIR. Thus, construction of the SRIP Off-Site Mitigation would not result in a significant impact and would not alter the conclusions of the SRIP FEIR.

Summary of Potential Effects on Wildfire

The proposed modifications will not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects, with respect to wildfire. No further environmental review is required. (Public Resources Code § 21166; CEQA Guidelines § 15162.)

References

- California Department of Forestry and Fire Protection (Cal Fire), 2023. Available at: <https://osfm.fire.ca.gov/fire-hazard-severity-zone-maps-2022/>. Accessed, November 7, 2023.
- City of Irvine, 2023. Evacuation Zones Map. 2023. Available at: <https://cityofirvine.maps.arcgis.com/apps/webappviewer/index.html?id=c452152c1a5a46129dde513d8652e81e>. Accessed November 7, 2023.

3.21 Mandatory Findings of Significance

<i>Issues (and Supporting Information Sources):</i>	<i>Yes</i>	<i>No</i>
XXI. MANDATORY FINDINGS OF SIGNIFICANCE —		
a) Does the Project Modification have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the Project Modification have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the Project Modification have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

The SRIP FEIR concluded that the SRIP would not have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The SRIP Off-Site Mitigation would enhance riparian woodland and freshwater marsh habitat onsite and would therefore be a benefit to the surrounding environment. As explained within this Addendum, the SRIP Off-Site Mitigation would not result in new significant environmental effects, or result in a substantial increase in the severity of previously identified significant effects. As a result, the SRIP Off-Site Mitigation would not alter the conclusions of the SRIP FEIR.

- b) **Does the project have impacts that are individually limited, but cumulatively considerable?**

The SRIP FEIR identified the SRIP’s contribution to cumulative impacts for all resource topics and concluded that cumulative impacts would be less than significant, often with implementation of mitigation measures. The SRIP Off-Site Mitigation would enhance riparian woodland and freshwater marsh habitat onsite and would therefore be a benefit to the surrounding environment. As a result, the SRIP Off-Site Mitigation would therefore not increase impacts substantially (as

described in this Addendum) that could result in cumulatively considerable contributions significant impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The SRIP FEIR concluded that the SRIP would not result in impacts that could cause substantial adverse effects on human beings, either directly or indirectly. The SRIP Off-Site Mitigation would enhance riparian woodland and freshwater marsh habitat onsite and would therefore be a benefit to the surrounding environment. As a result, the SRIP Off-Site Mitigation would therefore not increase impacts substantially (as described in this Addendum) that could result in cumulatively considerable contributions significant impacts.

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SECTION 4

Determination

As mentioned in Section 1.3, per CEQA Guidelines Section 15168(c)(2), IRWD as Lead Agency, finds that the SRIP Off-Site Mitigation, pursuant to CEQA Guidelines Section 15162, no subsequent EIR would be required because there would not be substantial changes in the project which will require major revisions of the previous EIR due to involvement of new significant environmental effects or severity of previously identified significant impacts. Furthermore, new information associated with the proposed modifications do not indicate that the SRIP Off-Site Mitigation will have one or more significant effects not discussed in the adopted Final EIR; that significant effects previously examined will be substantially more severe than shown in the adopted Final EIR; that mitigation measures or alternatives previously found not to be feasible would in fact be feasible; or that mitigation measures or alternatives which are considerably different from those analyzed in the adopted Final EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measures or alternative. As analyzed in this document above, and pursuant to Section 15164(a) of the CEQA Guidelines, which provides that an addendum to a previously certified EIR is permissible if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. IRWD has determined the proposed SRIP Off-Site Mitigation would not result in any of the conditions listed in CEQA Guidelines Section 15162. As a result, this Addendum has been prepared and would be the appropriate CEQA document for the SRIP Off-Site Mitigation.

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Appendix A
**San Joaquin Marsh Wetland
Mitigation Concept Design and
Feasibility Study**

FINAL

SAN JOAQUIN MARSH WETLAND MITIGATION CONCEPT DESIGN AND FEASIBILITY STUDY

for the Syphon Reservoir Improvement Project

Prepared for
Irvine Ranch Water District

July 7, 2023



SAN JOAQUIN MARSH WETLAND MITIGATION CONCEPT DESIGN AND FEASIBILITY STUDY

for the Syphon Reservoir Improvement Project

Prepared for
Irvine Ranch Water District

July 7, 2023

Services provided pursuant to this Agreement are intended solely for the use and benefit of the Irvine Ranch Water District.

No other person or entity shall be entitled to rely on the services, opinions, recommendations, plans or specifications provided pursuant to this agreement without the express written consent of ESA, 575 Market Street, San Francisco CA 94105.

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TABLE OF CONTENTS

San Joaquin Marsh Wetland Mitigation Concept Design & Feasibility Study for the Syphon Reservoir Improvement Project

	<u>Page</u>
1.0 Introduction.....	1
2.0 Existing Conditions.....	4
2.1 Mitigation Site.....	4
2.2 Discussion of San Joaquin Marsh	12
2.3 Discussion of University of California Natural Reserve System San Joaquin Marsh.....	14
3.0 Conceptual Design & Feasibility	17
3.1 Grading Design	17
3.2 Water Supply and Hydraulic Design	19
3.3 Planting Design	24
3.4 Operations and Maintenance Discussion	34
3.5 Opinion of Likely Construction and Maintenance Costs.....	35
4.0 Next Steps	37
4.1 Preliminary Design	37
4.2 CEQA Compliance and Regulatory Permitting.....	38
5.0 References	39

List of Figures

Figure 1 Mitigation Concept at San Joaquin Marsh	3
Figure 2 Existing Conditions.....	6
Figure 3 Site Topography.....	7
Figure 4 Existing Plant Communities	8
Figure 5 2022-2023 Groundwater Levels at Monitoring Wells.....	11
Figure 6 San Joaquin Marsh Flow Schematic and Monitoring Stations	13
Figure 7 UC NRS San Joaquin Marsh areas	16

List of Tables

Table 1 Groundwater Levels at Monitoring Wells 10
Table 1 Habitat Mitigation Requirements and Proposed Concept Acreages 17
Table 2 Hydraulic Design Summary 23
Table 3 Freshwater Marsh Seed Mix and Plant Palette 29
Table 4 Riparian Willow Scrub Seed Mix and Plant Palette 30
Table 5 Upland Sage Scrub Seed Mix and Plant Palette 31
Table 6 Opinion of Likely Costs for San Joaquin Marsh Wetland Mitigation Concept 36

Appendices

- A. Conceptual Design Drawings
- B. Water Demand Estimate
- C. Pump Performance Curves
- D. Pipe Calculations

SYPHON RESERVOIR PROJECT

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study

1.0 Introduction

Irvine Ranch Water District (IRWD) has evaluated options to provide compensatory mitigation for wetland and riparian habitat impacts resulting from the proposed expansion of the Syphon Reservoir. The Syphon Reservoir is an existing recycled water storage reservoir located northeast of Portola Parkway on the west side of State Route 133 (SR-133). The proposed Syphon Reservoir Improvement Project (SRIP) would increase the storage capacity of the Syphon Reservoir from 500 acre-feet to approximately 5,000 acre-feet to serve the community's seasonal and future recycled water needs. Increased use of recycled water will make more drinking water available and help withstand future water shortages. Construction of the expanded reservoir will impact riparian woodland and freshwater marsh (i.e., wetland) habitats at that site. A separate plan has been developed to replace woody riparian habitat via on-site creation at Syphon Reservoir as part of that project, but additional off-site habitat creation is needed due to on-site spatial limitations and the feasibility and costs to create more such habitat at the reservoir site.

IRWD retained ESA to evaluate potential options to provide additional off-site habitat mitigation acreage to satisfy mitigation. IRWD and ESA's evaluation included review of opportunities and constraints to add habitat at Rattlesnake Reservoir, Irvine Lake, Sand Canyon Reservoir, San Joaquin Reservoir, and around the existing IRWD-managed riparian and wetlands habitat in the San Joaquin Marsh between Campus Drive and Michelson Drive next to the Michelson Water Reclamation Plant. None of these sites were found to offer sufficient or practical opportunities to provide sufficient habitat mitigation. IRWD therefore focused the evaluation on IRWD's property in the San Joaquin Marsh south of Campus Drive.

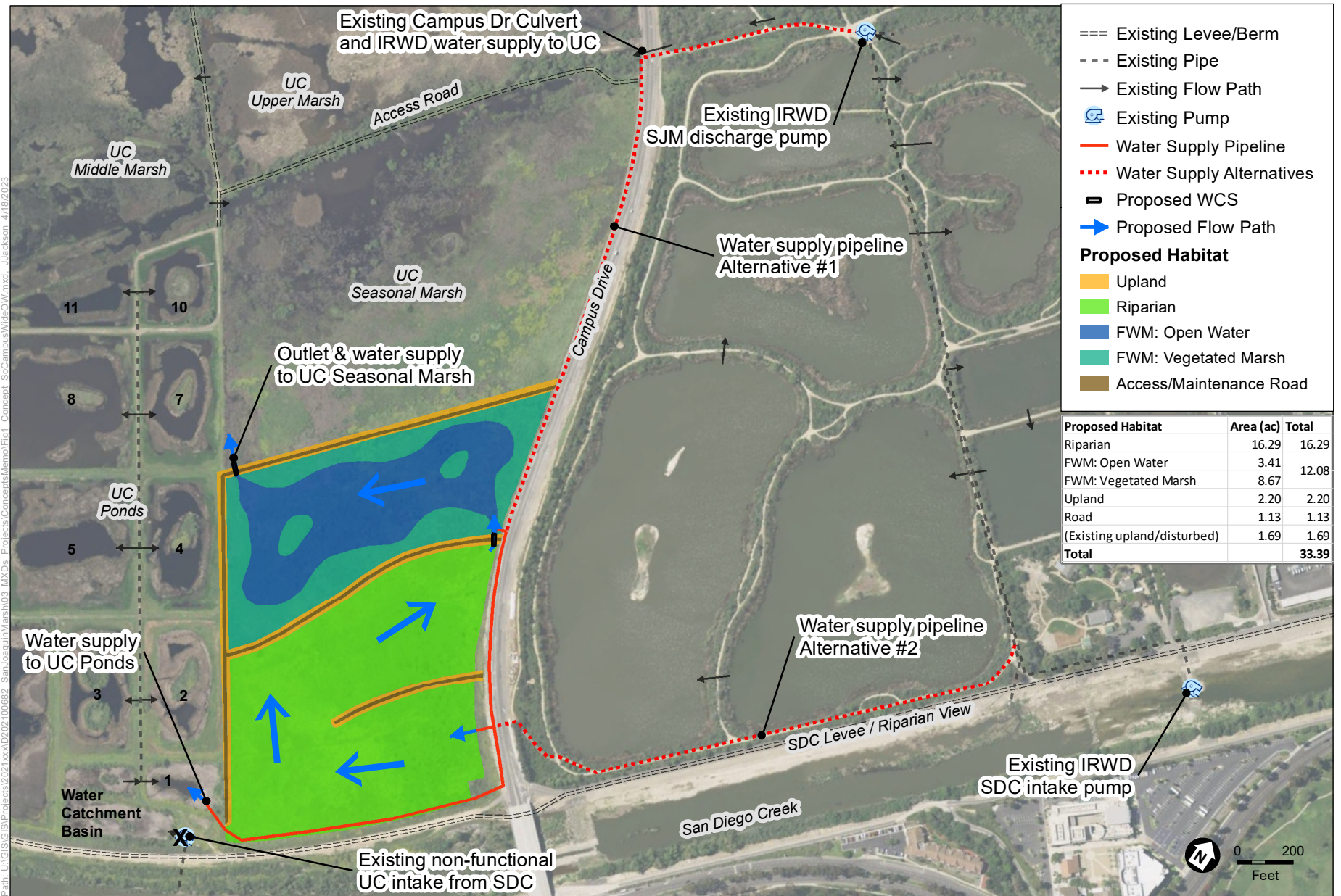
ESA developed potential concepts and assessed the feasibility of creating the necessary additional freshwater marsh and riparian woodland habitat at the San Joaquin Marsh south of Campus Drive. Key goals for the conceptual habitat mitigation at this property are that it should fulfill the off-site riparian and wetland habitat mitigation acreage requirement and also provide mitigation for impacts to least Bell's vireo and other riparian-associated special status wildlife resulting from the SRIP implementation.

This report documents the conceptual design elements and estimated costs to construct and maintain the proposed habitat mitigation at the subject property as well as improve water delivery options to UC Natural Reserve System's San Joaquin Freshwater Marsh Reserve. This site is southwest of Campus Drive on the northwest side of the San Diego Creek Levee (**Figure 1**) in the

City of Irvine, in Orange County, California. This mitigation concept is the preferred alternative for mitigation at San Joaquin Marsh and was selected following assessments by ESA and discussions with IRWD and representatives from the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS). Technical work that led to this concept is documented in memoranda prepared by ESA on existing conditions, opportunities, and constraints for mitigation at San Joaquin Marsh (ESA 2021a) and responses to USFWS and CDFW questions on initial concepts (ESA 2022). The mitigation concept provides approximately 16.29 acres of riparian woodland and 12.08 acres of freshwater marsh (i.e., bulrush and cat-tail marsh with open water). These acreages exceeds the minimum offsite mitigation acreages required for the Syphon Reservoir Expansion Project, which are 9.6 acres riparian woodland and 10.66 acres freshwater marsh. The additional “extra” acres of riparian woodland and freshwater marsh habitat, above what is required for the Syphon Project, may be used to mitigate impacts associated with future IRWD projects, subject to necessary approvals from CDFW and USFWS.

IRWD prepared a Draft and Final Environmental Impact Report (DEIR, FEIR) for the Syphon Reservoir Improvement Project (State Clearinghouse No. 2019080009) and a Notice of Determination (NOD) approving the project was filed in compliance with Section 21108 and 21152 of the Public Resources Code on July 26, 2021. However, at the time of Final EIR publication, a site had not yet been selected for the requisite off-site riparian and wetland habitat mitigation and a conceptual design was undetermined. The relevant mitigation requirement (BIO-4) noted that IRWD was working with the wildlife agencies to develop a mitigation program to address temporal impacts to least Bell’s vireo and other riparian-associated special-status wildlife species (e.g., yellow warbler, yellow-breasted chat) and stipulated that off-site land would be set aside and areas containing habitat suitable for least Bell’s vireo and associated riparian special-status wildlife species (e.g., yellow warbler, yellow-breasted chat) would be created or restored to compensate for temporal loss [of suitable habitat] in an amount or at a ratio determined acceptable by the USFWS and CDFW. The efforts to develop a plan that would satisfy the wildlife agencies culminated in the spring of 2023 with an agreement between IRWD, CDFW, and USFWS on a mitigation concept and appropriate mitigation ratios. This agreement requires the replacement of 6.0 acres of riparian habitat on site (to mitigate for impacts to 3.0 acres at a 2:1 ratio) and allows for all the off-site riparian and wetland habitat mitigation to be provided for on IRWD’s San Joaquin Marsh south of Campus Drive. Furthermore, it was agreed that establishing a minimum of 9.6 acres of woody riparian habitat off-site would mitigate SRIP impacts to the other 3.2 acres of woody riparian habitat on site at a 3:1 ratio. Similarly, it was agreed that the minimum requirement to establish 10.66 acres of freshwater marsh habitat off-site would be sufficient to mitigate for SRIP impacts to 5.33 acres of marsh habitat at the existing reservoir site at a 2:1 ratio.

Section 2 summarizes existing conditions at the mitigation site, including topography, biological resources, groundwater. **Section 3** presents the preferred mitigation concept and describes the various design elements that include grading design, water supply and hydraulic design, planting design, operations, maintenance, and monitoring, as well as estimates of likely cost of implementation. **Section 4** lists next steps that are needed to plan, design and implement the wetland mitigation concept at San Joaquin Marsh. Conceptual design plans and typical sections are shown in Appendix A.



SOURCE: IRWD, ESA, NAIP

Note: FWM=Freshwater Marsh, SDC=San Diego Creek, WCS=Water Control Structure

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study . D202100682.00

Figure 1
IRWD San Joaquin Marsh Wetland Mitigation Concept



2.0 Existing Conditions

This section summarizes the existing conditions at the mitigation site as well as relevant information on existing conditions at the adjacent wetlands in IRWD's San Joaquin Marsh (referred to as San Joaquin Marsh) and the University of California (UC) Natural Reserve System (NRS) San Joaquin Marsh Reserve property. (Note that areas within the UC property are referred to as UC Seasonal Marsh, UC Pond 1, 2, etc.).

2.1 Mitigation Site

The proposed mitigation site covers approximately 33.4 acres and is bordered by Campus Drive to the northeast and the San Diego Creek levee to the southeast. The UC Natural Reserve System's San Joaquin Freshwater Marsh Reserve borders the rest of the IRWD property with a Seasonal Marsh area just to the northwest and a system of interconnected ponds to the southwest. Slightly more than one half the subject parcel on the southeast side was occupied by what was known as the "Small Area Mitigation Site 1" (SAMS-1). SAMS-1 was planted with a willow tree forest around 1989/1990, which later failed due to lack of water with only a few remnant trees still remaining. Another habitat restoration and water quality improvement concept, the "Natural Treatment System 62" (NTS-62) project, was considered for the remaining portion of the IRWD property, but was not implemented. These parcels are shown in **Figure 2** along with existing pumps and pipes at San Joaquin Marsh. Note that SAMS-1 and NTS-62 are subareas of the parcel owned by IRWD. IRWD uses SAMS-1 and NTS-62 as names to identify and refer to the two subareas.

2.1.1 Topography

Elevations within the IRWD property and UC Seasonal Marsh slope from approximately 12 feet NAVD in the southeast to 5 feet NAVD in the northwest (**Figure 3**) as shown in recent LiDAR (USGS 2011). Existing elevations in the portion of IRWD's property previously used by The Irvine Company (TIC) for SAMS-1 appear to be too high above ground water levels (see Section 2.1.3, below) to permanently support riparian habitat without irrigation. This is presumably why riparian habitat in SAMS-1 has slowly diminished in overall cover (see **Figure 4**) and continues to dwindle in the absence of supplemental irrigation.

2.1.2 Vegetation Communities

Existing vegetation communities within the proposed mitigation site are shown on Figure 4. The majority of the 33.4-acre property exhibits a relatively dense herbaceous cover or herbaceous understory comprised mainly of two invasive non-native mustard species, Sahara mustard (*Brassica tournefortii*) and black mustard (*Brassica nigra*), with invasive non-native fennel (*Foeniculum vulgare*) as a common element in most areas. The northern and southwestern parts of the property, previously considered as the site for NTS-62, also exhibits the same prevalence of ruderal mustard and fennel. A number of small patches of alkali heath (*Frankenia salina*) also occur in the southwestern area of the site. It is speculated that these alkali heath patches may be relying on some seepage of water from the ponds on the UC property to the southwest, but that is unconfirmed. At the time the survey was performed to identify and map vegetation in this area

(October 2021), which was in early fall after an extremely dry year, the patches of alkali heath appeared mostly brown and in very poor condition.

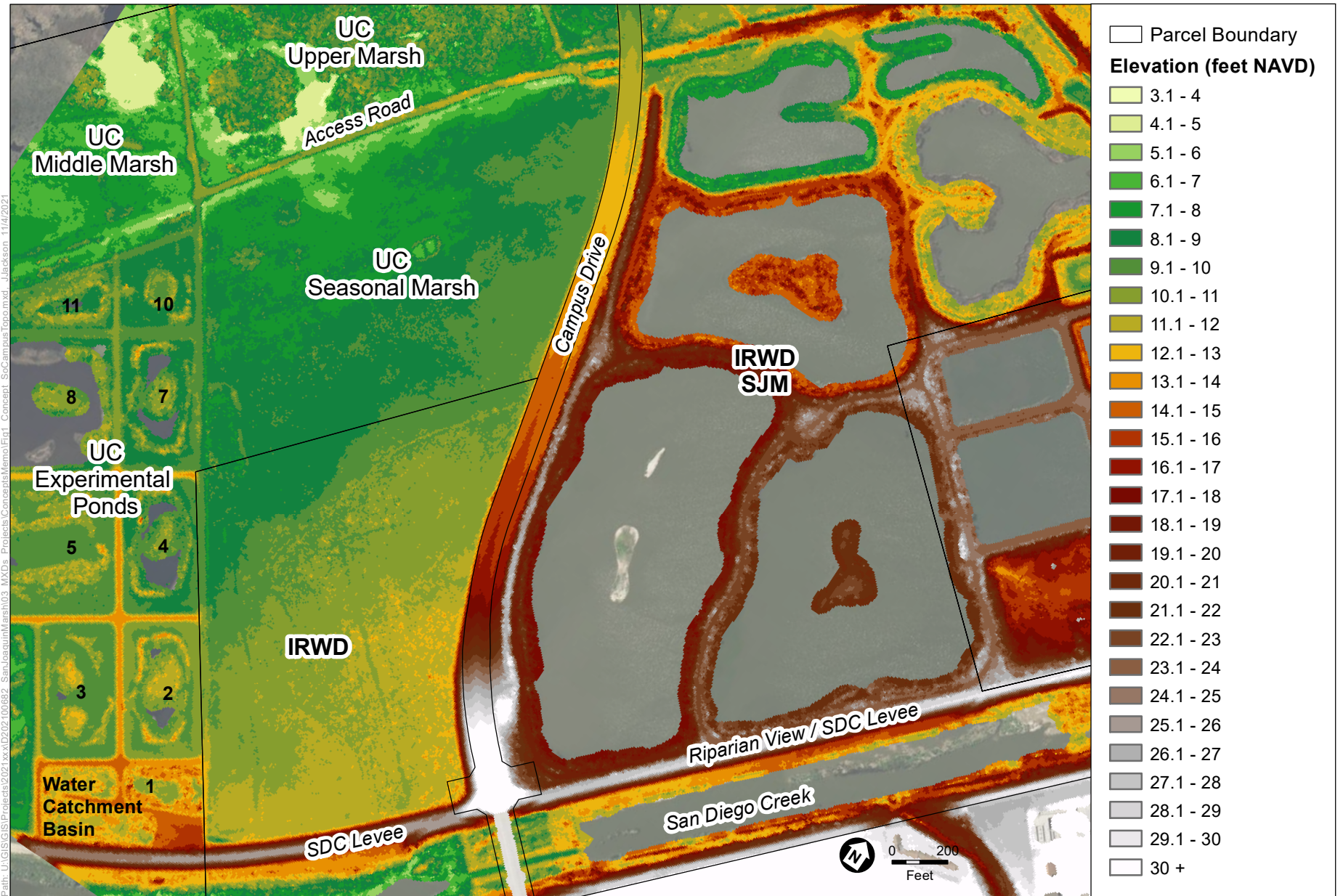
The central and southeastern portion of the parcel, that roughly corresponds to the failed SAMS-1 site, exhibits a moderately-dense mix of both upland and riparian shrubs and trees. Patches of remnant native riparian elements include areas dominated by black willow (*Salix gooddingii*) and mule fat (*Baccharis salicifolia*). Tree of heaven (*Ailanthus altissima*), another invasive non-native, is also present commonly and is co-dominant with willow in one large patch. Coyote brush (*Baccharis pilularis*) is scattered occasionally throughout much of the property, but is common to dominant in patches of moderately dense upland shrub vegetation in the south central and southeast corner. Several patch areas of upland vegetation are dominated by large perennial shrubs that are usually found in mixed chaparral and coastal scrub habitats, including lemonade berry (*Rhus integrifolia*), and toyon (*Heteromeles arbutifolia*). Other patch areas are dominated primarily by coyote brush with mule fat also present in some areas and California encelia (*Encelia californica*) also present along Campus Drive. An understory of mustard and fennel is also prevalent on all these patch areas.



SOURCE: IRWD, ESA, NAIP

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study . D202100682.00

Figure 2
Existing Conditions

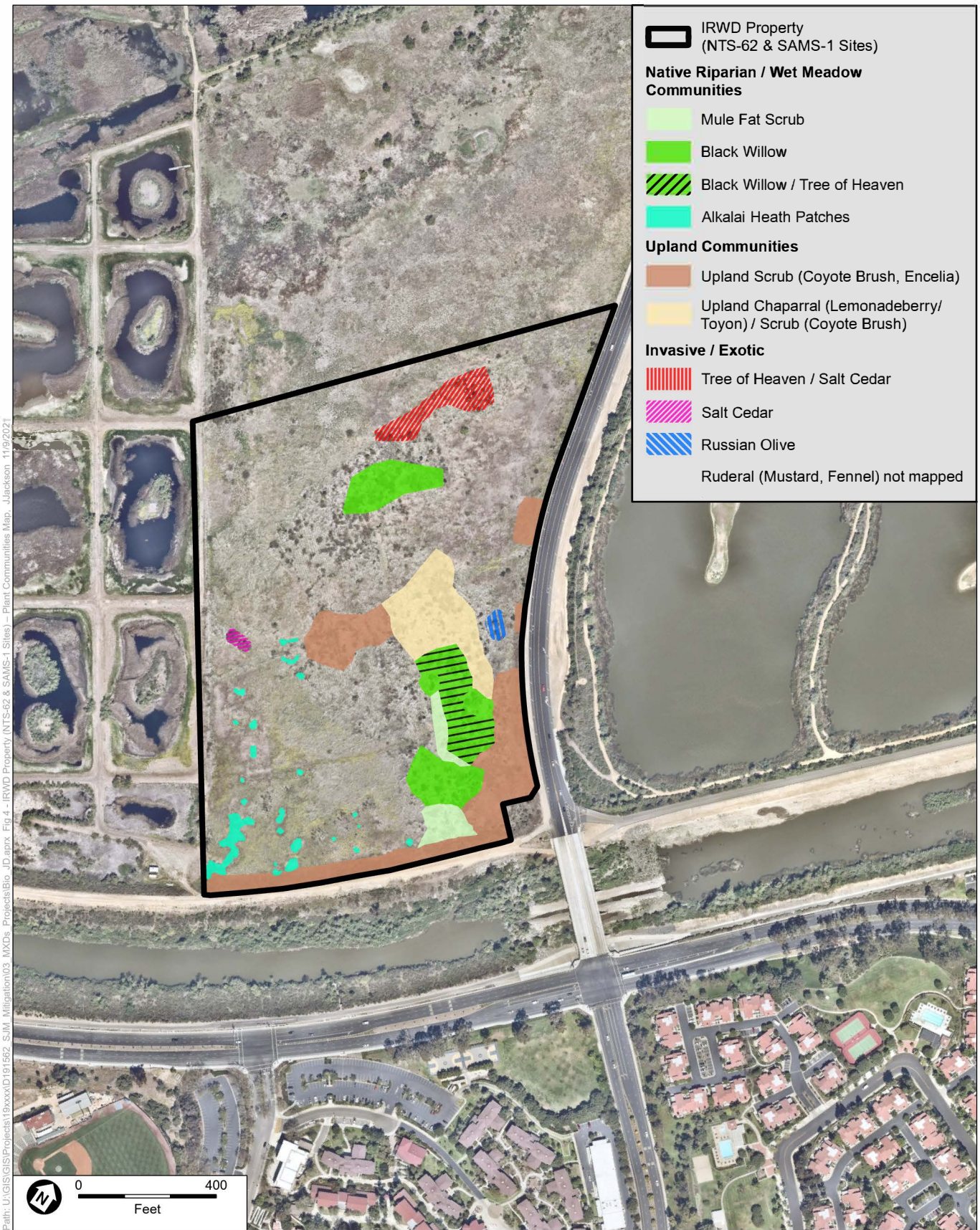


SOURCE: IRWD, ESA, NAIP, NOAA / USGS

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study . D202100682.00



Figure 3
Site Topography



SOURCE: NearMap, 2021; ESA, 2021

San Joaquin Marsh – Potential Mitigation Areas

Figure 4
Existing Plant Communities

The black willow trees may have relatively deep roots, as no groundwater or soil saturation was observed within the upper 20 inches of soil in the vicinity of these trees. The presence of abandoned irrigation distribution piping indicates that the black willows were established with artificial irrigation. Examination of a succession of aerial photographs of the area since the 2000s and the presence of many dead snags shows that the originally planted willow woodland area has shrunk considerably and the remnant willow trees are still struggling. These willow exhibit drought stress (loss of leaves, browning/yellowing leaves), whereas adjacent upland species (i.e., coyote brush, lemonadeberry (*Rhus integrifolia*), tree of heaven) do not exhibit these symptoms. In many cases, adjacent specimens of tree of heaven are taller and more vigorous than the willows.

The entire 33.4-acre area, including SAMS-1 and NTS-62, presents opportunities for wetland/riparian habitat creation and enhancement based partly on the presumption that the hydrology can be modified to sustain hydrophytic vegetation. Creation and enhancement of native riparian/wetland habitat would also require extensive removal and subsequent maintenance to control of ruderal herbaceous cover (i.e., mustard and fennel), along with substantial replanting and seeding of native species appropriate to the modified hydrologic regime. Furthermore, removal and control of invasive exotic tree and shrub species, including tree of heaven, tamarisk (*Tamarix ramosissima*), Russian olive (*Eleagnus angustifolia*) and any Mexican fan palm (*Washingtonia filifera*) specimens, is also highly desirable to prevent further spreading and establishment of these elements. If these exotic elements are not removed, the current trend appears to be toward exotics becoming dominant in the area. That would continue to diminish the value of the site for wildlife and such a condition would pose an ever-increasing threat of invasion by these exotics into the UC property and other local areas such as San Diego Creek and the San Joaquin Marsh property north of Campus Drive. The project design allows for preservation of patches of the remnant native riparian vegetation in the SAMS-1 area. To the extent practical, native willows and woody scrub vegetation would be preserved in place during site preparations and contouring for the habitat mitigation.

2.1.3 Groundwater and subsurface conditions

ESA monitored groundwater conditions at the mitigation area. Five groundwater sampling wells were installed in September 2022 in the four corners and center of the mitigation site to establish a baseline understanding of seasonal groundwater level fluctuations and inform the mitigation grading, planting, and irrigation conceptual design. The monitoring wells extend to approximately 15 feet below ground level with approximately 3 feet of pipe extending above ground. During the drilling of the wells, ESA biologists and the drilling team observed a clay layer at approximately 10 to 11 feet below grade at the two locations closest to San Diego Creek, and approximately 12 to 15 feet below grade at the site center and corners adjacent to UC Seasonal Marsh property.

Groundwater levels observed at the monitoring wells are summarized in **Table 1** below. Ground elevations (Grd EL) are listed at each monitoring well location for reference. Fall 2022 groundwater readings at the wells showed a water table in the site that ranged from just over 5 feet to over 15 feet below ground surface at the end of the dry season. The 2022-2023 winter season was exceptionally wet, and by mid-March, the groundwater had risen to the ground surface in the west corner of the site and was less than 4 feet below grade in the other corners of

the site. (Note that the central site well (4-Mid) has been dry and is presumed to have an issue associated with the well installation).

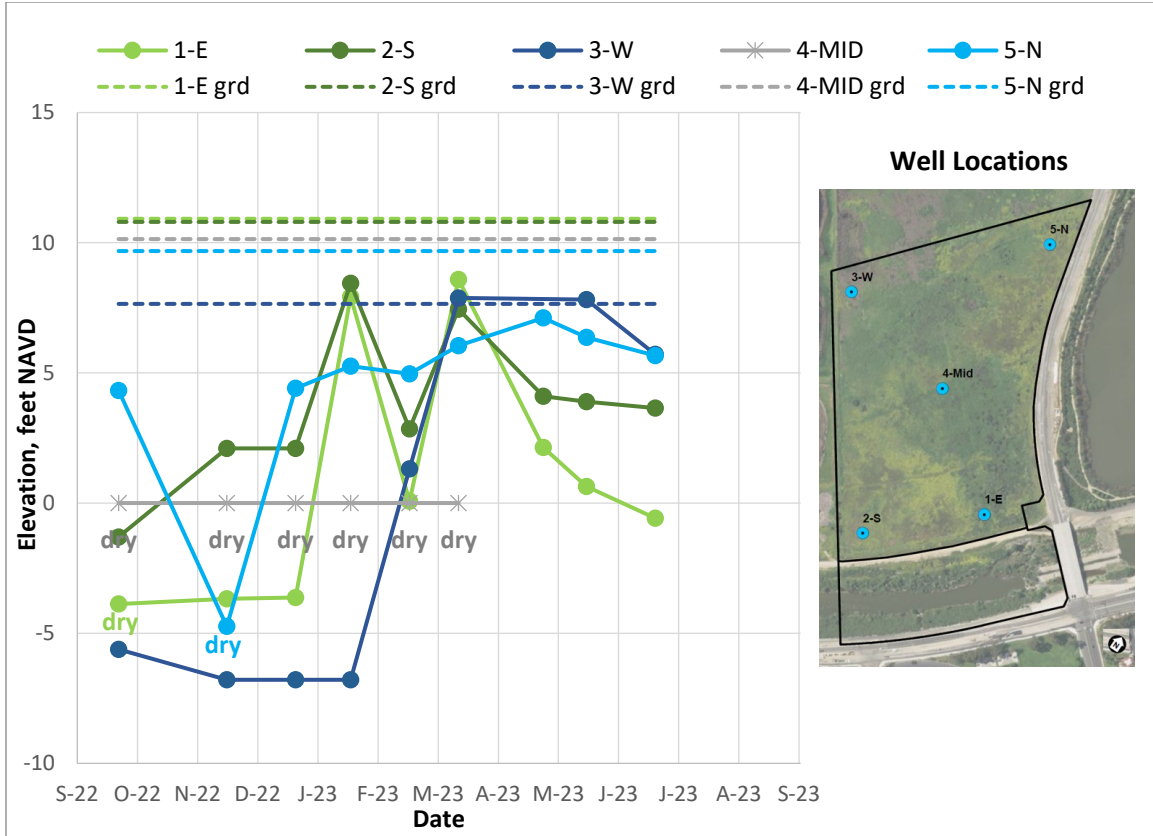
TABLE 1
GROUNDWATER ELEVATIONS (IN FEET NAVD) AT MONITORING WELLS

Date	1-E Grd EL 10.9	2-S Grd EL 10.8	3-W Grd EL 7.7	4-Mid Grd EL 10.1	5-N Grd EL 9.7
9/22/2022	dry	-1.3	-5.6	dry	4.3
11/16/2022	-3.7	2.1	-6.8	dry	dry
12/21/2022	-3.6	2.1	-6.8	dry	4.4
1/18/2023	7.9	8.4	-6.8	dry	5.3
2/17/2023	0.1	2.9	1.3	dry	5.0
3/14/2023	8.6	7.5	7.9	dry	6.0
4/26/2023	2.1	4.1	0.0	dry	7.1
5/18/2023	0.6	3.9	7.8	dry	6.4
6/22/2023	-0.6	3.7	5.7	dry	5.7

Figure 5 below plots the groundwater levels across the mitigation site observed to date, with an inset showing the well locations. The timing of the groundwater monitoring wells deployment captured a wide range of depths to groundwater at the site – very low groundwater levels in the beginning of the monitoring period (at the end of the 2022 dry season) that recovered after a very wet year (2022-2023 wet season).

Beyond the latest reading taken in June, one more groundwater measurement in October (before the 2023-2024 wet season begins) would be most valuable in understanding the overall drawdown of high winter groundwater levels over the 2023 summer and fall. ESA recommends leaving the monitoring wells in place since it could be useful to continue monitoring periodically during design and permitting as well as prior to construction.

Surface soil samples collected at the site during well installation in 2022 were classified as Clay and Sandy Clay Loam per USDA classifications (see site preparation discussion in Section 3.3.2 for further details).



SOURCE: ESRI, ESA, IRWD

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study

Figure 5
2022-2023 Groundwater Levels at Monitoring Wells

2.1.4 Utilities

Currently there are no known existing underground utilities in the main project site location other than those located within Campus Dr. and IRWD’s existing access roads and trails. These utilities are depicted in concept plans in Appendix A.

In Campus Dr., there is a six-inch (6-in) high pressure gas line (Southern California Gas Company) along the west side located in the gravel shoulder approximately seven (7) feet inward of the right-of-way boundary. There is also a 12-in IRWD water main along the east side located in the paved shoulder approximately 14 feet inward from the right-of-way line. A service crosses Campus Drive from this main to a meter on the west side of the road. Lastly, in the project vicinity, there is a telecommunication utility (AT&T / Pac Bell) within a couple feet of the 12-in IRWD water line that runs northward in Campus Drive approximately 300 feet from the San Diego Creek Bridge.

The existing San Joaquin Marsh Pump Station discharges to San Diego Creek via an existing 18-in pipe in the San Joaquin Marsh trail between Ponds A, B, 1, and 3 through 6. The southern half of that alignment is parallel to the existing 18-inch pipe from San Diego Creek to San Joaquin

Marsh. There is also a 2-inch irrigation pipe in the San Joaquin Marsh trail along the southern edge of Ponds 1 and 2.

The locations of the existing utilities are approximate and will need to be confirmed and/or revised for accuracy in future project phases.

2.2 Discussion of San Joaquin Marsh

This section summarizes water management, irrigation and groundwater conditions at the San Joaquin Marsh wetlands for reference. The 321-acre Irvine Ranch Water District (IRWD) San Joaquin Marsh (SJM) is one of the largest inland freshwater marsh systems in Southern California (Figure 6). Located on land impacted by years of urban runoff and the construction of the San Diego Creek flood control channel, the marsh was the epicenter of a major wetland creation and water quality treatment effort in the 1990s and early 2000s. The marsh is owned and operated by IRWD and is split roughly equally between riparian wetlands to the north and open water and freshwater marsh treatment wetlands to the south. The treatment wetlands were designed to reduce eutrophication in Newport Bay by removing pollutants – especially nitrogen – from San Diego Creek before they enter the bay, while providing habitats for a broad range of wildlife. Pollutant removal/transformation is achieved via a number of physical (e.g., sedimentation) and biogeochemical processes. Selenium and other trace metals are also monitored in the influent and effluent of SJM per guidelines established by IRWD, the Santa Ana Regional Water Quality Control Board (SARWQCB), and other regulatory agencies, though the marsh was not designed with selenium reduction explicitly in mind.

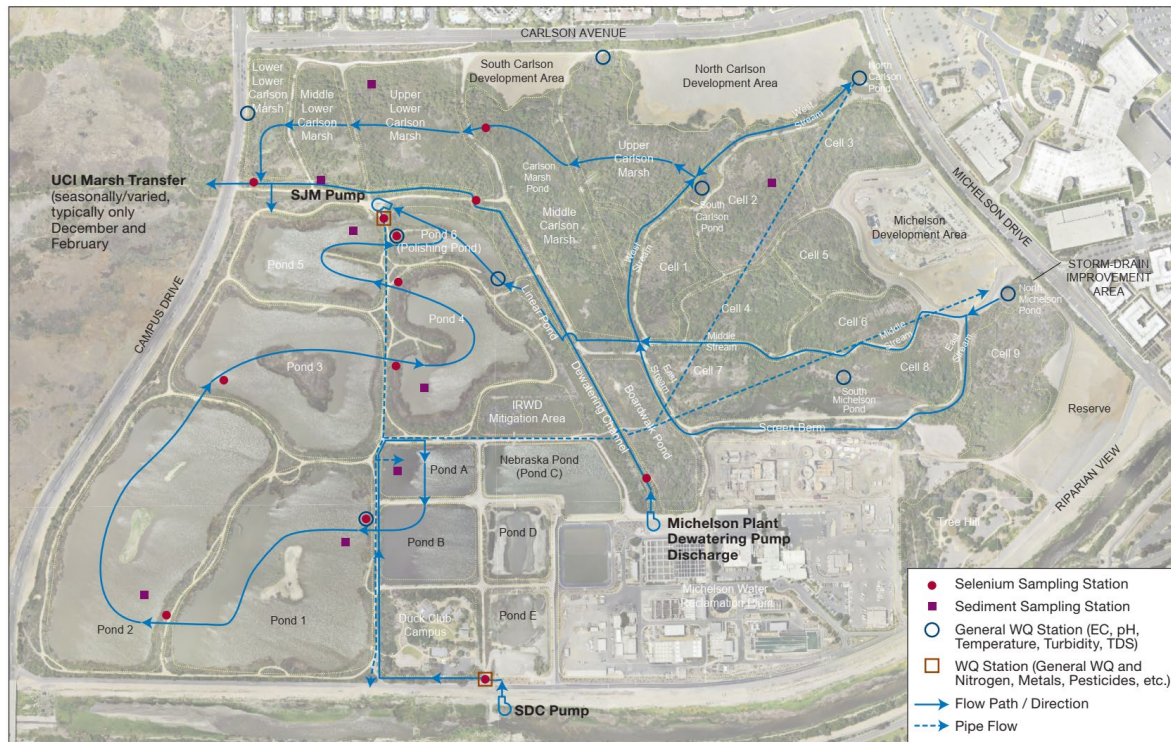
2.2.1 Water Management and Irrigation

The management and movement of water through the San Joaquin Marsh and adjoining areas are relatively complex and was documented recently in the San Joaquin Marsh Operation Guidelines and Resource Management Plan (ESA 2021b). Details pertinent to the mitigation concept are summarized below to provide context for the mitigation concept water supply.

Figure 6 presents an overview of the San Joaquin Marsh and a simplified depiction of normal operations. IRWD maintains two intake pumps to the San Joaquin Marsh from San Diego Creek: their capacity varies between about 3,000 to 4,000 gallons per minute (gpm) each (6.7 to 8.9 cubic feet per second or cfs) and can be as low as 2,000 gpm during dry water years. A capacity of only 6,000 gpm (13.4 cfs) is achieved when both intake pumps are operated together. Usually only one pump is operating at any given time. The intake pump to the San Joaquin Marsh generally operates 24 hours a day, 7 days a week.

Using the intake pump(s), water is diverted from San Diego Creek and moved through the San Joaquin Marsh over approximately 14 days before being discharged back into the creek. However, a portion of the effluent from Pond 6 is conveyed to irrigate the riparian woodlands located in the northern part of the marsh (e.g., Michelson Marsh Cells 1–9, Carlson Marsh; see **Figure 6**). The effluent from Pond 6 is effectively split at the San Joaquin Marsh Pump Station, which currently pumps approximately 1,100 gpm (or 2.45 cfs) north to Michelson and Carlson Marsh. IRWD recently implemented improvements to the San Joaquin Marsh pump and piping

system to also allow approximately 1.3 cfs of effluent from Pond 6 to be recirculated back to Ponds A, B, and 1 through 5. The remaining effluent is discharged back to San Diego Creek.



SOURCE: ESA 2021b

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study

Figure 6
San Joaquin Marsh Flow Schematic and Monitoring Stations

The portion of the San Joaquin Marsh effluent pumped to Michelson and Carlson Marsh is used for irrigation. The cells in both marshes are graded into a series of mounds and furrows, similar to an agricultural field. Water fills the furrows and drains towards a central channel in each cell, which drain to the adjacent channels (West, Middle, or East Stream). Additional flow is routed through the stream channels adjacent to the marsh cells to circulate water through the streams and avoid stagnation.

As of April 2023, IRWD is at the end of the third year of implementing reduced irrigation of Michelson and Carlson Marsh (I. Swift, IRWD, pers. comm.) as recommended in the San Joaquin Marsh Operation Guidelines and Resource Management Plan (ESA 2021b). In year one, IRWD stopped flood irrigation of the marshes for 3 to 4 weeks at a time during the wet season. Instead, IRWD irrigated the marshes once per week for a 24-hour period during the dry season and increased irrigation to two times per week during the wet season. Wet season irrigation twice per week resulted in standing water. In year two, IRWD irrigated marsh areas once per week throughout the entire year and has continued this practice in year three. IRWD is monitoring groundwater levels, soil moisture, and stomatal conductance of vegetation compared to willows and cottonwoods in other areas. Irrigation once per week has maintained conditions that support the riparian habitat. IRWD plans to test incrementally decreasing irrigation during the dry season in future years.

It has been previously determined that the riparian vegetation species in Michelson and Carlson Marsh are not self-sustaining without irrigation. On-site experience has shown that not irrigating the cells during the dry season can result in die-back of vegetation. IRWD has also observed that the willow roots are typically 1 to 2 feet deep at most and fibrous, rather than woody. Riparian species like willow require deep root contact with the water table in order to be self-sustaining and resilient to extended dry periods (Griggs and Gilbert 2009). IRWD's current irrigation practice, which follows recommendations from the San Joaquin Marsh Operation Guidelines and Resource Management Plan (ESA 2021b), is intended to encourage deeper rooting of existing vegetation.

Occasionally, after large rain events, water is diverted from the San Joaquin Marsh to the UC NRS San Joaquin Marsh property to the south (see **Figure 6**). When this occurs, the rate at which water is diverted to Cells 1 through 9 (and subsequently to the UC NRS property) is increased.

2.2.2 Groundwater

The depth to groundwater at IRWD piezometer wells at the Carlson and Michelson Marshes ranges over the wet and dry seasons as follows (see ESA 2021b for more details):

- Piezometer 14 groundwater ranges from 3.5 to 9.5 feet below ground surface
- Piezometer 15 groundwater ranges 4 feet to 16 feet below ground surface

Groundwater depths and fluctuations at Michelson and Carlson Marshes are similar to observed groundwater patterns at the proposed mitigation site. Due to similar groundwater conditions at the two sites, riparian habitat irrigation and sustainability are expected to be similar at the two sites.

2.3 Discussion of University of California Natural Reserve System San Joaquin Marsh

The UC NRS San Joaquin Marsh occupies approximately 202 acres directly adjacent to and partially surrounding the proposed mitigation site, wrapping around the site from the San Diego Creek (SDC) levee at the southwest corner to Campus Drive at the northwest corner (**Figure 7**). To the southwest of IRWD's proposed mitigation site, there are UC Ponds or "cells" that UC may use for research purposes. The cells vary from relatively dry, to perennial ponds and seasonal marsh. The proposed mitigation concept includes replacement of a berm that separates the mitigation site and the UC Ponds.

IRWD currently supplies water to the UC NRS via a box culvert under Campus Drive to the UC Upper Marsh (**Figure 7**). Water from the Upper Marsh flows into the Middle Marsh and Lower Marsh. The Middle Marsh occasionally overflows into the UC Seasonal Wetland over the water control structure and berm between the two areas. There is a discharge culvert from the Lower Marsh to SDC, but it is blocked and non-functional. The UC Ponds are designed to receive water from SDC via a pump station that historically discharged to the UC Water Catchment Basin; however, the pump intake pipe at SDC is above the SDC water level and the pump station is currently non-functional. The UC Ponds are designed to flow in series from Pond 1 to Pond 10. UC currently fills the Ponds by filling the lowest Ponds (10 and 11) from the Middle Marsh and

backwatering the ponds up towards Pond 1. UCI is in the design and permitting phase for the San Joaquin Marsh Reserve Enhancement Plan, which proposes improvements throughout the marsh, including clearing the discharge culvert to SDC, various new/replacement culverts, and other enhancements.

IRWD has coordinated with UCI on the conceptual design of the proposed mitigation to include improvements that will benefit both the proposed mitigation and UC Marsh as described further in the following sections.



SOURCE: UCI 2020b

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study

Figure 7
UC NRS San Joaquin Marsh areas

3.0 Conceptual Design & Feasibility

The mitigation concept includes establishing a mix of riparian woodland and freshwater marsh habitats to compensate for impacts to similar habitat that would result from implementation of the Syphon Reservoir Improvement Project. Minimum requisite acreages for riparian woodland and marsh habitat mitigation at San Joaquin Marsh are summarized in **Table 2** below.

TABLE 2
HABITAT MITIGATION REQUIREMENTS AND PROPOSED CONCEPT ACREAGES

Habitat Type	Minimum Required	Proposed Concept
Riparian Woodland / Riparian Scrub	9.6 ac	16.29 ac
Freshwater Marsh	10.66 ac	12.08 ac
Upland Sage Scrub	n/a	2.20
Total	20.26 ac	30.57 ac

This concept involves establishing more than the minimum required acreage for the above habitat types and will include approximately 12.08 acres of freshwater marsh and open water, 16.29 acres of riparian woodland habitat, as well as up to approximately 2.20 acres of native upland sage scrub habitat on areas that will not be subject to inundation or saturation (e.g., berm slopes). It is possible that riparian woodland species could also become established on the lower portions of the berm slopes, increasing the riparian woodland/scrub canopy area above the estimate of 16.29 acres. As discussed and agreed to by IRWD, USFWS, and CDFW, any extra woody riparian or marsh habitat acreage established at the site that exceeds the minimum mitigation requirements may be used by and for IRWD as compensatory mitigation for impacts to similar habitat associated with other IRWD projects in the local area. Such use of surplus habitat acreage as mitigation would be subject to future project permit and mitigation ratios and requirements.

The concept design was developed to make use of the IRWD parcel for mitigation creation while reducing potential environmental impacts associated with the mitigation project. Project design features and mitigation measures to be implemented during construction will reduce potential impacts of the project.

The following sections present the conceptual grading design, hydraulic design, planting design, operations and maintenance, and likely costs. Key considerations that inform the design and cost estimate are specified for each category.

3.1 Grading Design

The concept grading design was developed to reduce onsite cut and fill, the need for off-site hauling of soils, and construction costs. Onsite grading is primarily focused on excavation to create open water in the freshwater marsh area and channels in the riparian area, and fill to create access berms. Most of the site will be cleared of vegetation, except existing patches of native riparian habitat and herbaceous alkali heath may be protected and enhanced by selectively exotics removal.

At this stage in the design process there is a high level of uncertainty regarding the suitability of onsite soils for constructing the containment berms. For grading and cost considerations, we assume that onsite material would be suitable for berm construction. A geotechnical engineer will need to conduct additional data collection (e.g., borings) and develop recommendations for site earthwork. The conceptual design assumes that clay amendment to the bottom of the freshwater marsh open water may be desirable as an optional project component to decrease permeability, manage moisture and enhance hydrology for the freshwater marsh and open water habitat. The concept grading plan and typical sections are provided in Appendix A.

Grading Design includes the following elements:

- Clearing and Grubbing – most of the site will be cleared and grubbed while desirable natives within the riparian woodland cell may be selectively grubbed around or protected in place. All grubbed material must be removed and disposed of as greenwaste (nearest facility is Tierra Verde next to the Great Park), or at a landfill. Dead willow logs may be chipped and reused as a top dressing and carbon source in the riparian cell.
- Riparian woodland / riparian scrub area: three channels that undulate along the cell corridor will be excavated to convey irrigation water throughout the cell. Channel dimensions are 3 feet bottom width, 3:1 side slopes and 1 foot deep, corresponding to 9 feet top width. Channel slope is low, with up to 0.5 feet elevation change along the length of the channel and cell. Conceptual channel lengths are approximately 1,600 to 2,200 feet. Within the rest of the riparian cell, the ground surface will be graded to slope and drain to the channels. Grades slope from 11.5 feet NAVD88 around the cell perimeter berms to 10.5 feet NAVD88 at the channel banks (typically requiring up to 1 foot cut or fill).
- Freshwater Marsh: inflow and outflow channels and a central open water area will be excavated. The open water area will be excavated 2 to 5 feet to a bottom elevation of 5.5 feet NAVD88 (3 feet below a design water level of 8.5 feet NAVD). The open water bottom elevation, depth, and design water level are similar to other freshwater marsh ponds at San Joaquin Marsh (see ESA 2021b). The open water will promote mixing with fringe vegetated areas and islands similar to existing San Joaquin Marsh Ponds. The surrounding marsh area will be graded to slope and drain from 9.5 feet at the cell perimeter berms to 8.5 feet NAVD around the open water. Grading depths range from 2 feet of cut to 2 feet of fill.
- Berm Construction – Berms will be constructed around each wetland area, ideally with fill from onsite soils, to provide maintenance access and hydraulic separation between the areas. An additional berm is also included to guide flow through the riparian area. The proposed height of the berms will range from 2 to 5 feet above existing grade. The berms are designed to elevation 14 to 15 feet NAVD to accommodate some settlement and match the adjacent berm elevations in the rest of the UC ponds that range from 13 to 13.5 feet NAVD88. The proposed berm top width is 12 feet to support vehicular access, with 2:1 side slopes. The perimeter berm along the UC NRS San Joaquin Marsh property line will occupy/replace the existing small/low berm separating the UC and IRWD parcels. Similar to the existing berm, this new berm will be mostly on IRWD property, but will extend somewhat onto UC property. The conceptual design has the new raised berm construction starting from the berm toe on the UC Ponds side of the berm and avoids fill within the existing pond interior. Alternatively, future phases of the design could refine the berm location and design so that the new berm is entirely on IRWD property, if desired. Berm construction will include base preparation, e.g., removal of the top 1 foot of soil after clearing and grubbing.

Important considerations for site grading include groundwater and seepage. Based on review of irrigation regime and groundwater levels observed at the Michelson and Carlson Marshes, we assume that riparian woodland could be established and sustained at the proposed mitigation site if it is managed by IRWD similarly to the Carlson and Michelson Marshes. To conservatively account for seepage losses in the freshwater marsh, the design includes an optional Bentonite layer for the freshwater marsh open water area. The need for clay or bentonite import to limit seepage in the freshwater marsh is subject to further assessment including geotechnical testing of soil characteristics and infiltration rate.

3.2 Water Supply and Hydraulic Design

3.2.1 Water Supply for Irrigation

The wetland mitigation site would be irrigated with water that has circulated through the San Joaquin Marsh ponds after being pumped from San Diego Creek (SDC). ESA (2022) estimated a total diversion and irrigation amount of approximately 41 to 61 million gallons per year for the 30-acre proposed mitigation based on estimated evapotranspiration (see Appendix B for details). This annual volume is 4.2 to 6.2 acre-feet per acre (ac-ft/ac), which can be thought of as the “depth” of water supplied to the area over a year. The estimated annual volume is also equivalent to an annual average rate of 0.11 to 0.17 million gallons per day (MGD), or 0.17 to 0.26 cubic feet per second (cfs); however, irrigation would be intermittent and rates would therefore be higher than these annual averages as discussed near the end of this section.

The above irrigation estimates are based on evapotranspiration. The actual irrigation amount will depend on factors such as infiltration rate and groundwater depth. These factors are expected to be similar for the proposed mitigation and the San Joaquin Marsh’s Michelson and Carlson Marsh. ESA therefore compared the estimated irrigation amount to the actual irrigation amount at Michelson and Carlson Marsh. (See Section 2.2 for more discussion on Michelson and Carlson Marsh conditions and management.) Data provided by IRWD for January to December 2022 indicate that an estimated total of 153 million gallons were supplied to the 101-acre area including Michelson Marsh, Carlson Marsh, and Boardwalk Pond/Cell. This volume is equivalent to 4.6 ac-ft/ac, which is within and towards the lower end of the range of 4.2 to 6.2 ac-ft/ac estimated for the proposed mitigation. Using this estimated range for the proposed wetland mitigation is therefore appropriate for the conceptual mitigation design. Initial irrigation requirements could be higher (initially) as vegetation cover becomes established. The estimated range of irrigation may be refined through more detailed estimates and analysis in subsequent phases of design.

Stormwater is circulated through the San Joaquin Marsh via the SDC intake pump (when SDC flows are between approximately 2 cfs and 18.6 cfs), gravity flow through Pond A to Pond 6, and returned to SDC via the IRWD San Joaquin Marsh discharge pump. Irrigation water for the proposed mitigation site would be delivered via a new pipeline that stems off of the existing IRWD San Joaquin Marsh discharge pump. Discharge from San Joaquin Marsh could be managed on a flexible schedule to irrigate the mitigation when water is available (e.g., when flows in SDC are above 2 cfs and/or when water is not being supplied to the San Joaquin Marsh’s Michelson and Carlson Marshes within San Joaquin Marsh).

The rate of water supply to the mitigation site will depend on the irrigation schedule. For riparian woodland, once riparian vegetation is established, habitat may be irrigated based on the following recommendations from the San Joaquin Marsh Operating Guidelines and Resource Management Plan (ESA 2021b):

- Water deeply but relatively infrequently, such as once per month from January through June (when riparian woodland species are most actively growing) with sufficient volume to cover habitat acreage to a depth of 6 to 12 inches (i.e., 0.5 to 1 ac-ft/ac) during each monthly irrigation cycle. In wet years, when local precipitation amounts to at least 9 to 10 inches from October through winter months, irrigation may not be necessary until late March or April.
- Curtail irrigation events during the dry season, particularly when willows and mule fat require less and less water as they become relatively dormant (e.g., July to December). It is possible that some or all of the areas could be allowed to dry out once the vegetation is mature.
- Install a number of soil moisture sensors at different depths below the ground, and measure stomatal conductance of the nearby vegetation. Soil moisture and stomatal conductance data may be used to refine water management and the irrigation plan as needed.

As discussed in Section 2.2, IRWD currently irrigates Michelson and Carlson Marsh riparian habitat once per week over a 24-hour period throughout the year. IRWD's goal is to curtail irrigation events during the dry season as described above.

The freshwater marsh may be irrigated to maintain open water depths of approximately 3 feet during the wet season. The open water area may be allowed to dry out during the dry season, similar to how the UC Ponds are managed and other natural seasonal marshes function. The freshwater marsh may still be irrigated in the dry season to maintain appropriate soil moisture for the freshwater marsh vegetation.

ESA (2022) simulated diversion of flow from SDC to the proposed mitigation with irrigation occurring from November 1 to March 31 over the period from 2012 to 2021. This is the driest 10-year period based on the available SDC flow data since 1990. The 2012 to 2021 period includes six of eight years with the lowest SDC average water year flow on record since 1990 [and seven of nine years with the lowest SDC average wet season (November to March) flow]. ESA estimated that diversions to irrigate the proposed mitigation would occur when SDC at Campus Drive flow was greater than 2 cfs, which approximates the time when IRWD is not diverting water to San Joaquin Marsh's Michelson and Carlson Marshes or the UC NRS San Joaquin Marsh. Currently, IRWD does not pump water into San Joaquin Marsh during storm events to avoid intake of sediment-laden water. ESA (2013) previously estimated that IRWD turns the SJM pumps off when SDC flow is above approximately 18.6 cfs. Based on flow analysis of records from 2012 to 2021, the diversion timeframe between November and March when SDC flows are between 2 and 18.6 cfs is 93 days on average. Diverting the upper end estimate of 61 million gallons to irrigate the proposed mitigation over this 93-day timeframe is equivalent to an average diversion rate of 1 cfs.

Note that actual diversion may occur over a shorter timeframe and diversion rates may be higher than this average. For example, if the proposed mitigation is irrigated once per month over 6

months, irrigation could be supplied at 2.2 cfs over 7 days or 3.1 cfs over 5 days (once per month). If the mitigation is irrigated once per week over 6 months, irrigation could be supplied at 1.8 cfs over 2 days or 3.6 cfs over 1 day (once per week).

ESA (2022) estimated that irrigation of the proposed mitigation is expected to divert up to approximately 16% of SDC flow during the estimated 93 day diversion timeframe, but only 1.6% of total average wet season SDC flow (0.62 cfs of 40 cfs) on average at Campus Drive based on diversions simulated from November to March over the period from 2012 to 2021. Note that this estimate accounts for SDC diversions from the Peters Canyon Channel Water Capture Project, which occur upstream of San Joaquin Marsh. ESA's assessment showed that over the 93 day diversion timeframe, the proposed diversion would reduce the SDC water surface elevation by 0.2 feet in the vicinity of Campus Drive. This estimated change in depth and overall wetted channel area would be relatively small and is not expected to significantly effect SDC groundwater levels, soil moisture, habitat, or vegetation.

Note that future phases of the design may consider using recycled water as a potential secondary/supplemental source for irrigation. To allow for this, recycled water infrastructure would need to be extended to the site from north of Campus Drive.

3.2.2 Hydraulic Design

This section describes the hydraulic design for the mitigation concept, including water supply connection and conveyance options and hydraulic structures proposed to control flow through the mitigation site.

The project's new riparian woodland cell and freshwater marsh cells will receive water from the existing San Joaquin Marsh pump station, which currently discharges to San Diego Creek as well as to the San Joaquin Marsh ponds and San Joaquin Marsh Michelson Marsh and Carlson Marsh. The concept design and cost estimate assume that the existing San Joaquin Marsh discharge pump can be used to irrigate the mitigation site by installing new control valving to alternate flow between the multiple discharge points from the lift station.

Two piping alignment alternatives are considered in this concept design. Both provide a discharge into the new freshwater marsh cell, the new riparian woodland cell, and the existing UC Pond 1. One alternative consists of a new water pipeline that connects the San Joaquin Marsh pump station and project site via Campus Drive, and the other connects the project site and the 18-inch San Diego Creek outfall pipe via the southernmost San Joaquin Marsh trail. Refer to the site overview plan in Appendix A for a depiction of these alternatives, which are described further below. Both alternatives provide a new pipeline and service to UC Pond 1, which will provide water supply directly to the UC Pond system. This new service to Pond 1 will benefit the UC Marsh, since, as discussed in Section 2.3 above, the UC pump intake from SDC to the UC Ponds is non-functional. Management of the water supply to the UC NRS must be consistent with the terms set forth in the Agreement Between UC and IRWD Concerning Diversion of Water Pursuant to Riparian Water Right, executed in 2020 (IRWD & UC 2020).

The Campus Drive pipeline alternative taps into the existing 18-inch San Joaquin Marsh pump station discharge pipeline at the pump station immediately on the downstream side of the existing strainer. The new water pipeline then proceeds southwesterly toward Campus Drive in the northern San Joaquin Marsh trail that is south of the Lower Carlson Marshes. The new water pipeline crosses Campus Drive and then turns south toward San Diego Creek. Two 10-inch discharge services will tee from the main, one into each cell, to serve the project. The total main pipeline length to the riparian woodland cell service is approximately 3,335 feet. From there, a 10-inch service (approximately 1500-foot long) continues south, turns southwesterly along the toe of the San Diego Creek levee, and extends beyond the southwestern project limit to UC Pond 1. Note that the pipeline could be installed in the San Diego Creek levee access road instead of along the toe of the levee, which would require coordination with Orange County Public Works.

The San Joaquin Marsh trail pipeline alternative also taps into the existing 18-inch San Joaquin Marsh pump station discharge pipeline, but closer to the end (approximately 2,255 feet from the pump station), just upstream of the levee San Diego Creek discharge point. This alternative connects upstream of the existing pressure reducing valve at the existing intersection where a service extends to San Joaquin Marsh Pond 1. That existing service will be reconfigured to upsize the intersection and include a tee to the new project pipeline, which will proceed south to the existing San Joaquin Marsh trail along the southern edge of San Joaquin Marsh Ponds 1 and 2. The new water pipeline continues southwesterly in the trail toward Campus Drive before following the trail to the west and crossing Campus Drive. The same project services as the Campus Drive alternative are included with the riparian woodland cell's service at a four-way intersection from the road crossing. The main continues northwesterly to serve the freshwater marsh cell. The total main pipeline length is approximately 2,824 feet. The same UC Pond 1 service as the Campus Drive alternative continues from the 4-way intersection.

The concept alternatives consider project needs and design, existing conditions, IRWD standards, and preliminary calculations. The pipeline layouts are based on the existing improvements and project service locations. Each alternative crosses Campus Drive from east to west, which includes crossing the existing 12-in water main and 6-in high pressure gas line. The San Joaquin Marsh trail alternative must also cross the telecommunication line. The Campus Drive alignment is within the City of Irvine's right-of-way, but is proposed within the paved shoulder. The project pipelines are AWWA C-900, DR-14 PVC and include the required intersection control valving as well as air release and blowoff assemblies, cathodic protection, and metering for each of the two project services. No meter is proposed for the UC Pond 1 service as a part of this project, but the service shall be metered by UC to measure and report their use quantities. The overall project's estimated irrigation supply rate is approximately 3.6 cfs roughly 1,616 gpm).

Estimated sizing for the new project water pipeline is a 12-inch diameter main with 10-inch services into both project cells and to UC Pond 1. Water pipeline sizing is preliminarily based on the project demand and typical city distribution velocities between two (2) and seven (7) feet per second (fps). (Given the short length of the project services from the main to the project cells, future design phases can assess whether smaller piping is sufficient in order to reduce meter sizing.) The total dynamic head (TDH) is calculated by adding the static head of the vertical elevation difference and the friction losses in the 12- and 10-in pipelines. The elevation difference

from the San Joaquin Marsh station pumps to the services (including UC Pond 1) is approximately 30 feet. The friction losses are 88 feet for the Campus Drive alternative and 84 feet for the SJM Trail Alternative. The total dynamic head is 118 feet for the Campus Drive alternative and 114 feet for the San Joaquin Marsh trail alternative, as shown in **Table 3**.

**TABLE 3
HYDRAULIC DESIGN SUMMARY**

Pipe Hydraulic Parameters	Campus Drive Alternative	San Joaquin Marsh Trail Alternative
Existing 18" velocity, fps	2.231	2.231
Existing 18" pipe length, ft	30	2255
Existing 18" friction head, ft	0.0	2.8
12" mainline velocity, fps	5.262	5.262
12" mainline pipe length, ft	3335	2824
12" mainline friction head, ft	33.6	28.4
10" project service velocity, fps	7.438	7.438
10" project service pipe length, ft	63	31
10" project service friction head, ft	1.5	0.7
10" UC pond service velocity, fps	7.438	7.438
10" UC pond service pipe length, ft	1496	1496
10" UC pond service friction head, ft	35.0	35.0
Friction head factor of safety	1.25	1.25
System friction head, ft	88	84
System Static head, ft	30	30
System dynamic head, ft	118	114

The San Joaquin Marsh pump station capacity and operation assumption for irrigation service to the project is that control valving will isolate flow and alternate it between serving the project, serving the San Joaquin Marsh, serving Michelson and Carlson Marsh, and/or discharging into the San Diego Creek outfall. As provided by IRWD, the San Joaquin Marsh station pump design capacity is 5,400 gpm (12 cfs) at a TDH of 105 feet, and performance curves indicate a maximum efficiency of approximately 85%. The actual flow from the San Joaquin Marsh pump station is approximately 7.7 cfs on average, which at times is divided such that on average roughly 3.9 cfs goes to San Diego Creek (via the 18-inch pipeline), up to 2.5 cfs to the Carlson Marsh cells (via the 6-inch pipelines), and 1.3 cfs to the San Joaquin Marsh Ponds (via 8-in pipeline) (ESA 2014). The elevation difference in the existing system is 28 feet.

Appendix C shows the existing pump performance curves plotted with the project flow demand of 1,616 gpm. The maximum allowable TDH at this rate ranges between 145 and 175 feet (per

the different performance test results from 2001 to 2007). The project irrigation demand of 1,616 gpm with 12-inch mainline piping yields a TDH below the maximum allowable for each alignment option. Therefore, per the operating head of the pumps as shown on the provided performance curves, the existing San Joaquin Marsh station pumps each have capacity to serve the project. More detailed analysis of the existing and proposed systems in future design phases can indicate the potential for multiple system valve openings to direct flow from the San Joaquin Marsh pump station to multiple service/discharge locations simultaneously.

Water flow through the mitigation site will be controlled by the following structures:

- Riparian flow control basins – water will discharge into and out of the riparian woodland via distribution and outflow basins, respectively, each enclosed by a small perimeter berm.
- Flashboard risers – three structures built into the inflow distribution basin and outflow basin berms will split/merge flow through the three riparian channels (see channel grading discussion in Section 3.1)
- Culverts – a culvert with headwalls and rock riprap outflow scour protection will be located through the access berm to convey water from the riparian cell to the freshwater marsh cell. A similar culvert structure with an added flashboard riser will be located in the NW corner of the freshwater marsh cell to facilitate drainage/maintenance of the cell as needed, with outflow to the UC Seasonal Marsh.

These hydraulic components are shown on the concept grading plan in Appendix A.

3.3 Planting Design

3.3.1 General Approach

The general mitigation design approach includes planting and seeding appropriate native plant species in three habitat settings (i.e., freshwater marsh; riparian willow scrub, and upland sage scrub) which meet the project's wetland mitigation goals, provides good quality habitat for wildlife, and requires minimal long-term vegetation maintenance once the habitats are established. The anticipated planting/habitat establishment period is three to five years. During this period, temporary overhead spray irrigation is proposed to help establish seeded and planted species in the riparian and scrub habitat areas. Typically, the temporary overhead irrigation to assist with germination and initial growth is phased out and discontinued two to three years before the end of an establishment period to help confirm that the installed vegetation is established and self-sustaining. In this case, while the temporary overhead irrigation would be discontinued, the supplemental flow of water that will be piped in per project design to maintain saturated sub-surface conditions would be managed and maintained in perpetuity. Maintenance during the establishment period would mostly include non-native plant control, irrigation system operation and maintenance, native plant care and replacement as needed, and erosion control and trash removal. Post-establishment long-term maintenance would occur less frequently than during the establishment period and mostly include periodic control of problematic non-native invasive species (that may volunteer in the project), erosion control and trash removal as needed, and site protection measures as needed.

A conceptual planting plan for the mitigation site is included in Appendix A. Recommended site preparation measures, planting and seeding palettes and methods, maintenance and temporary irrigation, and long-term maintenance are discussed below.

3.3.2 Site Preparation

After clearing and grubbing and site grading is complete, the primary components of site preparation for revegetation include establishing appropriate site and soil conditions before planting and seeding. Existing soil on-site includes 184 – Omni Clay Drained (USGS Websoil Survey 2022) which occurs in low-lying areas and includes mixed alluvium parent material. The typical profile includes a clay horizon 0-17 inches deep, underlain by a silty clay horizon 17-60 inches deep. ESA collected soil samples in two areas, Area A and Area B, that were analyzed in early 2022. Area A is in the southern portion of the site and the sample was classified as clay. Area B is in the southeastern portion of the site and the sample was classified as sandy clay loam. The initial analysis indicates the soil is suitable for native plants, although some amendments may be needed depending on more detailed mitigation design planning (soil amendments are included in the cost estimate). Based on the analysis, the two samples have a pH range of 7.1 to 7.5, ECe dS/m (i.e., electrical conductivity salinity value) range of 0.6 to 0.8, sodium adsorption ratio (SAR) range of 0.9 to 1.7, and organic percentage dry weight range of 1.87 to 2.90.

Providing soil conditions with sufficient fertility that are not physically compacted will improve the rate of revegetation establishment, and the health, and sustainability of the planted habitats. Therefore, it is recommended in the freshwater marsh and riparian areas that as part of the grading / contouring process that **(1)** surface soils are not left in a compacted condition (i.e., ripped and de-compacted as needed), and **(2)** soil amendments, as needed, be added and incorporated into the soil prior to planting. In locations where soil compaction can be closer to ≤ 85 percent, it will benefit native plants by providing less restriction to root growth and more available oxygen. Because the upper soil horizon includes beneficial organic matter and nutrients, potential topsoil salvaging and replacement will be evaluated and determined during subsequent, more detailed mitigation design planning. Because of the presence of clay soil, some potential mixing of soil within the upper soil profile to establish a composition including an increased loam component will also be considered further during more detailed mitigation design planning. As a final step of the grading process, roughening of the final soil surface by ripping or track walking and creating micro-topographic variation (i.e., small divots) will also help with retaining moisture and improving germination and establishment of seeded species.

Other important measures for revegetation site preparation include clear demarcation of revegetation limits, removal of trash and non-organic debris, control and removal of any non-native species (that may establish between grading and when planting/seeding occur), and implementation of erosion control measures as needed (e.g., fiber rolls, etc.).

3.3.3 Plant Sources

Native plant and seed material should be provided by **(1)** qualified and licensed suppliers with material sourced from the project area (i.e., San Joaquin Marsh or the central-western portions of Orange County, southern Los Angeles County or northern San Diego County), or **(2)** directly

from collections (contingent on approval) of cuttings and seed from San Joaquin Marsh. Use of locally-sourced plant material that is adapted to the local climate and site conditions will help maintain genetic integrity and improve mitigation performance.

Future phases of the project design may consider an option for an on-site temporary propagation facility. If desired and practical, an on-site facility (e.g., shade structure or more developed) could be established for production of some of the recommended plant material, which would allow for propagation of locally sourced and adapted indigenous plant material. An on-site propagation facility would generally allow more flexibility and tailored control of plant production outputs, which are adapted to the location in which they will be established. If a temporary propagation facility would be established, it is assumed it would grow plant material only for the project (although IRWD could produce additional material for other projects) and would produce container stock material grown in planting beds and include preparation and storage of cuttings (e.g., willows, etc.) prior to planting. Although possible, it may not always be practical to grow plants for seed harvest at this scale.

It is estimated that a propagation facility, including associated work areas, would temporarily occupy up to approximately ½ acre depending on its scale and the number plant that would be produced and stored. About 0.25 acre would be required for the propagation area and an additional 0.25 acre for access, work areas and storage. Electricity and water would need to be provided and it is assumed the propagation facility would be managed by a qualified propagation specialist who would be at the facility on a part time basis, with periodic assistance from one or two assistants.

The primary components of a propagation facility would include:

- Facility Entry
- Main Work Area
- Equipment and Materials Storage Shed
- Propagation Area
- Shaded Plant Storage Areas
- Media (Soil) and Compost Preparation and Storage Area

If IRWD is interested in potentially evaluating establishment of a temporary propagation facility, ESA can provide additional information regarding each of the bulleted component items listed above.

3.3.4 Planting and Seeding Palettes and Methods

There are three primary habitats that are planned to be revegetated and established in the mitigation site. These habitats include: freshwater marsh that will be subject to perennial inundation; riparian willow scrub (in the southern portions of the site and adjacent and above the freshwater marsh at the base of the interior berms) that will have saturated soil for part of the growing season and be within approximately 6 feet of groundwater; and upland sage scrub (along exterior berm slopes and upper portions of interior berm slopes adjacent and above riparian

planting areas). It is expected in the interface of these habitats there will be ecological and habitat ecotone transition areas with a mixture of planted / seeded and volunteer species.

Seed mixes and container plant palettes for the three habitats types are provided below in **Table 4**, **Table 5**, and **Table 6** with proposed quantities on a per acre basis. The species that have been selected have either been documented on-site, or within other San Joaquin Marsh areas. As referenced above, to maintain genetic integrity and improve plant performance (by using plants adapted to project site conditions), the source locations of container plants and seed should be from the San Joaquin Marsh or the central-western portions of Orange County, southern Los Angeles County or northern San Diego County. At the time container plants and seed are ordered, a qualified restoration ecologist should review the source locations to determine if some substitutions (e.g., increasing the quantity of one or more species to compensate for species that may not be used) would be appropriate.

The freshwater marsh container plant palette and seed mix includes a combination of bulrush (*Schoenoplectus* spp. and *Bolboschoenus* ssp.) and other appropriate species. *Typha* (cat-tail) species are purposefully not included in the plant palette because they (i.e., one or more *Typha* species) are expected to readily volunteer into the site from nearby sources in San Joaquin Marsh. The proposed freshwater marsh seed mix is intended only to be applied to the higher elevation portions of the freshwater marsh (and not applied to areas that will mostly be inundated).

The riparian willow scrub container plant palette includes a combination of understory species with some shrubs and overstory tree species to develop multiple plant layers/strata. The riparian willow scrub seed mix will be evenly applied within the riparian habitat mitigation area. For the species in the upland sage scrub container plant palette, it is intended that planting will occur in groupings of approximately 6 to 10 plants with spacing between plants of approximately 6 feet. The plant groupings should be easier to irrigate and maintain, and will provide initial groupings (“islands”) of shrubs that would be expected to expand (via growth and distribution of seed) over time. The upland sage scrub seed mix will be evenly applied within the upland revegetation area. The riparian plant palette presented below notes the use of container plants for installing the various willow species. However, live pole cuttings taken from healthy specimens of particular species that may be available elsewhere on IRWD property in the San Joaquin Marsh may be used as a primary source, either instead of or to supplement container plantings throughout the riparian cell and along the channel banks.

The proposed spacing and densities (i.e., number of plants per acres) are appropriate and are expected to be sufficient to establish the intended habitats based on the expected vertical and lateral growth of the plants of the various species to be planted and seeded. Planting densities could be increased, for example, to help meet success standards in a shorter period and accelerate the mitigation establishment timeframe although this would increase cost and could potentially result in increased intraspecific and interspecific competition (which can reduce fitness of both competitive individuals), if planting is too dense.

After grading and site preparation, the preferred period to plant and seed is in the fall and winter months (between late October/November and mid-January) to take advantage of the rainy season

and install plants when conditions are cooler and moister. Prior to planting and seeding, the recommended temporary irrigation system should be installed and tested to confirm it is operating properly (discussed in maintenance section below). Container plants should be installed prior to seeding, and adhere to standard installation practices including (1) setting the root ball atop of moistened native backfill in the planting hole so the plant collar (base of stem) is at least 1 inch higher than finished grade and (2) providing coarse, organic mulch approximately two inches deep within the planting basins (except no mulch around plants in the freshwater marsh). All the plants should initially be watered as part of installation, unless the soil is already wet or saturated (i.e., watering of plants in the freshwater marsh is not expected to be necessary).

After container plant (and pole cutting) installation, seeding can proceed. As referenced above, application of freshwater marsh seed is proposed to occur by hand within the higher elevation areas of the freshwater marsh, followed by raking to incorporate the seed into the top ¼ inch of soil. Application of the riparian willow scrub and upland sage scrub seed mixes is proposed to occur by a hydroseeding method with a slurry mix of seed, organic hydromulch (at a rate of between 1,500 to 2,500 pounds [lbs.] per acre depending on slope gradients), and organic tackifier (binder) at a rate of approximately 150 lbs. per acre. Once installation is complete, typically an “as-built” memorandum or report is prepared to document any changes in planting/seeding areas, species and quantities, and/or methods relative to project plans and specifications.

**TABLE 4
FRESHWATER MARSH SEED MIX AND PLANT PALETTE**

Seed Mix ¹					
Scientific Name	Common Name	Life Form		Min. % Purity/ Germination	Lbs./ Acre
<i>Cressa truxillensis</i>	alkali weed	perennial herb		10/60	3
<i>Cyperus eragrostis</i>	tall flatsedge	perennial grass-like herb		80/75	4
<i>Eleocharis macrostachya</i>	pale spike-rush	perennial grass-like herb		95/60	5
<i>Pluchea odorata</i>	salt marsh fleabane	annual, perennial herb		30/40	8
TOTAL					20
Container Stock					
Scientific Name ²	Common Name	Life Form	Container Size	Spacing (approximate feet on center from like species)	Number Per Acre ³
<i>Anemopsis californica</i>	yerba mansa	perennial herb	1-gallon	10	60
<i>Bolboschoenus maritimus</i>	prairie bulrush	perennial grass-like herb	rhizome cutting / plug or 1-gallon	9	55
<i>Bolboschoenus robustus</i>	sturdy bullrush	perennial grass-like herb	rhizome cutting / plug or 1-gallon	8	40
<i>Frankenia salina</i>	alkali heath	perennial herb	1-gallon	8	40
<i>Sarcocornia pacifica</i>	Pacific pickleweed		rhizome cutting / plug or 1-gallon	8	40
<i>Schoenoplectus americanus</i>	Olney's bulrush	perennial grass-like herb	rhizome cutting / plug or 1-gallon	12	100
<i>Schoenoplectus californicus</i>	California bulrush	perennial grass-like herb	rhizome cutting / plug or 1-gallon	12	100
TOTAL					435

¹ Species in seed mix will be applied in upper elevation portions of freshwater marsh habitat that will only periodically be inundated. Seed to be applied by hand and raked into the top one-quarter inch of soil.

² *Typha* (cattail) species are purposefully not included in the plant palette because they are expected to readily volunteer into the site from nearby sources in San Joaquin Marsh.

³ 435 plants per acre equals approximately planting on average 10-foot on-center.

**TABLE 5
RIPARIAN WILLOW SCRUB SEED MIX AND PLANT PALETTE**

Seed Mix ¹					
Scientific Name	Common Name	Life Form	Min. % Purity/ Germination	Lbs./ Acre	
<i>Ambrosia psilostachya</i>	western ragweed	perennial herb	45/45	5	
<i>Asclepias fascicularis</i>	narrow-leaf milkweed	perennial herb	90/65	2	
<i>Artemisia douglasiana</i>	mugwort	perennial herb	15/40	5	
<i>Artemisia dracunculus</i>	tarragon	perennial herb	10/50	2	
<i>Distichlis spicata</i>	salt grass	perennial grass	90/75	4	
<i>Elymus triticoides</i>	beardless wild-rye	perennial grass	90/80	3	
<i>Euthamia occidentalis</i>	western goldenrod	perennial herb	25/45	4	
<i>Heliotropium curassavicum</i>	salt heliotrope	perennial herb	15/50	2	
<i>Juncus balticus</i>	wire rush	perennial grass	95/80	2	
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle	perennial herb	38/70	3	
TOTAL				32	
Container Stock					
Scientific Name	Common Name	Life Form	Container Size	Spacing (approximate feet on center from like species)	Number Per Acre ²
Understory and Shrubs					
<i>Baccharis emoryi</i>	Emory's baccharis	shrub	1-gallon	12	120
<i>Baccharis salicifolia</i>	mulefat	shrub	1-gallon	8	230
<i>Elymus triticoides</i>	beardless wildrye	perennial grass	rose pots or 1-gallon	6	140
<i>Isocoma menziesii</i> var. <i>veronioides</i>	coastal goldenbush	shrub	1-gallon	20	30
<i>Rosa californica</i>	California rose	shrub	1-gallon	8	90
<i>Salix exigua</i>	narrow-leaved willow	shrub/tree	1-gallon	14	40
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry	shrub/tree	5-gallon	25	40
Trees					
<i>Platanus racemosa</i>	western sycamore	tree	5-gallon	50	16
<i>Populus fremontii</i>	Fremont cottonwood	tree	5-gallon	30	40
<i>Salix gooddingii</i>	Goodding's black willow	tree	1-gallon	25	40
<i>Salix laevigata</i>	Red willow	tree	1-gallon	25	40
<i>Salix lasiolepis</i>	arroyo willow	tree	1-gallon	20	64
TOTAL				890	

¹ Seed to be applied by hydroseed method with hydromulch and tackifier (binder).

² 890 plants per acre equals approximately planting on average 7-foot on-center.

**TABLE 6
UPLAND SAGE SCRUB SEED MIX AND PLANT PALETTE**

Seed Mix ¹					
Scientific Name	Common Name	Life Form	Min. % Purity/ Germination	Lbs./ Acre	
<i>Acmispon glaber</i> var. <i>glaber</i>	deerweed	perennial herb	95/80	4	
<i>Amsinckia intermedia</i>	common fiddleneck	annual herb	45/65	3	
<i>Artemisia californica</i>	California sagebrush	shrub	30/60	5	
<i>Corethrogyne filaginifolia</i>	common sand aster	perennial herb	8/30	3	
<i>Elymus condensatus</i>	giant wildrye	perennial grass	70/76	3	
<i>Eriogonum fasciculatum</i>	California buckwheat	shrub	55/16	6	
<i>Mirabilis laevis</i>	bush mallow	shrub	90/55	2	
<i>Peritoma arborea</i>	bladderpod	shrub	98/45	3	
<i>Salvia mellifera</i>	black sage	shrub	85/50	2	
<i>Stipa pulchra</i> (de-awned)	purple needlegrass	perennial grass	90/75	6	
TOTAL				38	
Container Stock					
Scientific Name	Common Name	Life Form	Container Size	Spacing (approximate feet on center from like species)	Number Per Acre ²
<i>Artemisia californica</i>	California sagebrush	shrub	1-gallon	6	50
<i>Eriogonum fasciculatum</i>	California buckwheat	shrub	1-gallon	6	42
<i>Heteromeles arbutifolia</i>	toyon	shrub	1-gallon	25	20
<i>Malosma laurina</i>	laurel sumac	shrub	1-gallon	35	14
<i>Rhus integrifolia</i>	lemonade berry	shrub	1-gallon	35	14
<i>Salvia mellifera</i>	black sage	shrub	1-gallon	6	30
TOTAL					170

¹ Seed to be applied by hydroseed method with hydromulch and tackifier (binder).

² 170 plants per acre equals approximately planting on average 16-foot on-center. For this project it is recommended to install container plants in scattered groupings of approximately 6 to 10 plants per group.

3.3.5 Planting Establishment and Maintenance

As referenced above, planting maintenance can be divided into short-term habitat establishment maintenance (i.e., five years) and long-term (post-establishment maintenance). As part of developing maintenance expectations and requirements, it is appropriate to develop mitigation success criteria and/or goals for metrics such as native plant cover, container plant survival, and threshold limits for non-native (weed) plant cover including problematic invasive perennial species. For example, mitigation goals for the establishment period of this project could include average 75 to 85 percent native cover, less than 10 percent non-native cover (not including invasive perennial species), and less than 1 percent invasive perennial species cover. In addition to planting and seeding of native species, the mitigation process is expected to include volunteers of native and non-native plant species. Maintenance is expected to be needed more frequently during the establishment period primarily due to an expected higher presence of non-native plant volunteers, irrigation system operation and maintenance needs, and potential erosion control needs. Once the native habitats are established, non-native plant cover is low, irrigation use has been discontinued, and the site is physically stabilized (i.e., no erosion issues), it is expected maintenance will be needed less frequently during the long-term maintenance period.

IRWD has proven experience in the long-term maintenance of wetland and riparian habitat, having successfully managed and maintained over 130 acres of the San Joaquin Marsh (north of Campus Drive) since a major pond reconfiguration and habitat restoration effort was completed in the late 90's. That area supports similar vegetation and habitat quality objectives and IRWD would apply the same Operational & Management Guidelines in the area south of Campus Drive for its long-term management that have worked so well in the larger area to the north for over 20 years. IRWD has also been successfully managing approximately 30 highly productive Natural Treatment System wetland areas of widely varying sizes in the IRWD service area for more than 15 years. Much of that expertise in monitoring and managing hydrology, and in controlling exotic species, etc., will be applied to the subject site in the long-term.

Short-term establishment maintenance (three to five years)

During this period, temporary irrigation is proposed to help establish seeded and planted species, except in the freshwater marsh where sufficient water will be supplied to establish the specified species. The long-term proposed water supply and irrigation (see Section 3.2.1) may also be used to provide temporary irrigation; however, a supplemental temporary irrigation system with an automated, above-ground irrigation system may be utilized for the riparian and upland (buffer) areas. An overhead spray system with sprinkler heads on risers may be preferred, although drip emitters (e.g., for upland sage scrub container plant groupings) could also be used. It is intended that temporary irrigation be used judiciously as a potential supplement to the long-term irrigation system, rainfall and naturally occurring soil moisture. Generally an irrigation schedule with less frequent but higher volume cycles should be used (with wetting and drying cycles) to promote deeper root systems and hardier plants. Typically, temporary irrigation is phased out and discontinued two to three years before the end of an establishment period to help confirm the habitats are established and self-sustaining. Once temporary irrigation use is phased out, the system components can be removed from the site. To establish bulrush species in the freshwater marsh, the water level will be monitored and controlled to provide appropriate conditions for

initial plant establishment and growth. Note that a temporary irrigation system could be installed using a tee from the long-term water supply and irrigation service pipe. Alternatively, recycled water piping could possibly be installed with the long-term water supply piping, or the existing domestic water line and meter at the site along Campus Drive could be used.

In addition to irrigation system operation and maintenance, maintenance activities during the establishment period would mostly include non-native plant control, native plant care and replacement as needed, and erosion control and trash removal. Non-native species can be divided between less problematic species that tend to diminish as native plant species establish and problematic invasive perennial species that can aggressively spread and out-compete native species if they are not controlled. Problematic invasive species are often defined as Moderate or High threats to California wildlands as listed by California Invasive Plant Council (Cal-IPC 2023) and additional species that have been identified as problematic within a particular site or region. Examples of problematic plant species detected in the vicinity of San Joaquin Marsh include eucalyptus (*Eucalyptus* spp.), fennel (*Foeniculum vulgare*), heart-podded hoary cress (*Lepidium draba*), myoporum (*Myoporum laetum*), Canary Island date palm (*Phoenix canariensis*), and tamarisk/salt cedar (*Tamarix* spp.). It is recommended most non-native plant control be conducted by physical means including hand pulling and use of hand tools or organic (non-synthetic herbicides) before weed species flower and set seed. In some cases, when invasive perennial species become larger it is not feasible to remove enough of the root system to prevent resprouting, and organic herbicides (which do not translocate down into root systems) also cannot prevent resprouting. In those cases, a synthetic herbicide approved for aquatic use would likely be the best control option.

As referenced above, maintenance during the short-term establishment period would also be expected to include native plant care and replacement as needed, and erosion control and trash removal. Native plant care would primarily include removing non-native species from planting basins, ensuring there is sufficient soil moisture, and addressing any harmful pests or diseases that may be detected. If supplemental container planting or seeding is considered necessary during the establishment period, it is recommended species be selected from the seed mixes and container plant palettes based on their performance on-site and also maintaining desirable native plant diversity.

Long-term maintenance (post-establishment period)

Provisions for site preservation and long-term management (including a funding commitment) are standard requirements for mitigation sites. In the case of San Joaquin Marsh, the project area is already protected biological open space, so a separate preservation mechanism (e.g., restrictive covenant or conservation easement) is not expected to be needed. The long-term management will be conducted by IRWD staff or a qualified land management entity retained by IRWD. Specific long-term management activities including scheduling and documentation / reporting are typically provided for resource agency review and input within a Mitigation Monitoring and Reporting Plan (HMMP) or a separate stand-alone management plan. As referenced above, it is the intent of the mitigation design to establish self-sustaining native habitats so the need for post-establishment long-term maintenance would be minimized and mostly include periodic control of problematic non-native invasive species (that may volunteer in the project), erosion control and

trash removal as needed, and site protection as needed. As a guideline, it is recommended during the long-term maintenance period that the site be checked by a qualified biologist at least twice a year to determine if maintenance activities are needed. If, for example, it is determined that some vegetation trimming or removal (i.e., beyond standard weed control) is needed, it should occur outside the bird nesting season (between September 15 and March 15) or a qualified biologist should conduct a nesting bird survey to determine whether vegetation trimming/removal could be conducted without impacting nesting birds.

3.4 Operations and Maintenance Discussion

Operations, maintenance and monitoring of the mitigation site will likely include the following activities:

- Flow control – valves would be manually operated to irrigate the riparian cell and/or freshwater marsh cell as needed (via SCADA or similar). The site will be irrigated similarly to the Carlson and Michelson Marshes in that the SJM Discharge Pump would send water from SJM Pond 6 to the mitigation site. To reduce turbidity input to SJM, the SDC Intake Pump is turned off when storm flows in San Diego Creek exceed approximately 18.6 cfs (ESA 2021a, b); irrigation supply to the mitigation site will depend on water levels in the SJM Ponds while the SDC Intake Pump is idle during storm flows.
- Inspect hydraulic structures – weekly, or more frequent checks that the wetland water levels meet the design criteria and to clean any obstructions on the inlet and outlet structures; adjust riparian cell flashboard rises/weir structures only as needed/desired.
- Inspect berms for evidence of failure by erosion, burrowing animals, windthrow of vegetation, or other causes – conducted annually.
- Manage vegetation – vegetation removal may be warranted if senesced vegetation accumulates in the wetland to the point of obstructing flow and causing ‘dead zones’. It is anticipated that vegetation removal would be an infrequent as-needed occurrence, perhaps on the order of once every 10 years. Vegetation management and harvesting of the vegetative material would only be considered if there is a need to improve flow and wind mixing in the freshwater marsh open water and inflow/outflow channels or address other identified issues.
- Mosquito abatement – many constructed wetlands employ mosquitofish to help reduce mosquito populations. The freshwater marsh open water area is intended in part to promote wind mixing and reduce stagnant water and mosquito breeding habitat. Additional seasonal treatment by the local mosquito abatement district will likely be needed in the riparian and/or freshwater marsh areas.
- Groundwater and moisture monitoring – existing groundwater wells may be protected in place or replaced with new wells after construction for future monitoring as the mitigation system is operated. Soil moisture monitoring and leaf stomatal conductance monitoring is also recommended, as IRWD is performing elsewhere in San Joaquin Marsh to inform wetland management and irrigation.
- Monitoring and reporting – monitoring and reporting by a consultant for years 1 through 4 with supplemental coordination to address habitat mitigation and revegetation performance.

Maintenance for planting during the short-term establishment period and long-term post-establishment period are discussed in Section 3.3.5.

3.5 Opinion of Likely Construction and Maintenance Costs

This section presents ESA’s opinion of likely construction costs for the wetland mitigation concept for San Joaquin Marsh. Summaries of the various project elements are presented in the text above. Table 7 lists the probable construction costs for the wetland mitigation concept and piping concepts. We have also estimated costs for planning and design, construction administration and support as rough percentages of construction costs. Note that costs for long-term management and operations are not included. The cost opinion includes an allowance for mitigation monitoring. Mitigation monitoring may include monitoring and assessing habitat mitigation and revegetation performance relative to mitigation requirements. Four years of monitoring are included in the cost opinion.

For planning purposes, we have provided order of magnitude estimates in 2024 dollars. These cost estimates are intended to provide an approximation of total project costs appropriate for the conceptual level of design. These cost estimates are considered to be approximately -30% to +50% accurate, and include a 35% contingency to account for project uncertainties (such as final design, permitting restrictions and bidding climate). These estimates are subject to refinement and revisions as the design is developed in future stages of the project.

The Campus Drive water pipeline is the alternative presented in the table below as it is the more expensive of the two pipeline options. Pipeline costs for the San Joaquin Marsh trail alternative is approximately 15% less cost.

This section focuses on high-level considerations related to overall construction of the mitigation concept. The staging for construction would be located onsite adjacent to the actual work area (i.e. within the IRWD parcel). As the site became constrained by finished earthwork, staging could be contained along Campus Dr. or possibly another area adjacent to the construction site (e.g., San Diego Creek levee access road or UC Seasonal Marsh).

Construction of the mitigation concept would involve the use of a variety of heavy construction equipment within the site. The majority of the equipment and vehicles would be associated with the earthwork and the access berm surfacing (e.g., gravel surfacing) phases of construction. Large construction equipment, including backhoes, bulldozers, compactors, excavators, haul trucks, pavers, and rollers, would be used during the construction phase of the proposed project. Truck trips off site for hauling earth will be reduced by balancing cut and fill on site. However, vegetative material cleared will need to be off hauled from the site. Also, pending further geotechnical data collection and recommendations, it may be desirable to import suitable material for constructing the containment berms and, as an optional project component, to amend soil or line the bottom of the freshwater marsh open water area with clay.

**TABLE 7
OPINION OF LIKELY COSTS FOR SAN JOAQUIN MARSH WETLAND MITIGATION CONCEPT**

Item #	Work Item	Quantity	Unit	Unit Cost	Item Cost
Site Preparation					
1	Debris Removal	1	LS	\$10,000	\$10,000
2	Clear and Grub	32	AC	\$20,000	\$635,000
Earthwork					
3	Earthwork	80,000	CY	\$21	\$1,713,000
4	Bentonite (open water lining, optional) ^b	6.7	Ac	\$87,000	\$586,000
5	Access Berms - Class 2 AB	5,500	SY	\$10	\$55,000
Hydraulic Structures					
6	Flashboard Risers, Culverts, and Rock Riprap	1	LS	\$60,000	\$60,000
Water Supply					
7	Piping, Fittings, Valves, etc.	1	LS	\$1,503,000	\$1,503,000
Vegetation					
8	Hydroseeding - Upland Sage Scrub	2.2	Ac	\$11,000	\$24,000
9	Hydroseeding - Freshwater Marsh	7.1	Ac	\$11,000	\$79,000
10	Hydroseeding - Riparian Willow Scrub	15.0	Ac	\$11,000	\$165,000
11	Plantings - Upland Sage Scrub 1 gal shrub	400	Ea	\$30	\$12,000
12	Plantings - Freshwater Marsh 1 gal shrub	3,600	Ea	\$30	\$114,000
13	Plantings - Riparian Willow Scrub 1 gal shrub	11,900	Ea	\$30	\$357,000
14	Plantings - Riparian Willow Scrub 5 gal tree	1,400	Ea	\$50	\$70,000
15	Temporary Irrigation	15.0	Ac	\$45,000	\$674,000
16	Plant Establishment & Maintenance Period (3 yr)	1	LS	\$500,000	\$500,000
CONSTRUCTION SUBTOTAL					\$6,678,000
17	Mobilization/Demobilization (4%)				\$267,000
18	Contractor's Bonds and Insurance (3%)				\$200,000
19	Contractor's Overhead and Profit (12%)				\$801,000
ESTIMATED BID PRICE					\$7,946,000
20	Construction Contingency (35%)				\$2,781,000
TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST					\$10,727,000
21	Planning, Engineering, Legal, and Administration (15%)				\$1,609,000
22	Owner's Reserve for Change Orders (5%)				\$536,000
23	Engineering Support During Construction (3%)				\$322,000
24	Construction Management (5%)				\$536,000
TOTAL ESTIMATE OF PROJECT CONSTRUCTION COST					\$13,730,000
25	Monitoring and Reporting (consultant)	1	LS	\$160,000	\$160,000
GRAND TOTAL					\$13,890,000

NOTES:

^a LS=lump sum, Ac=acre, CY=cubic yard, SY=square yard, Ea=each

^b Estimate includes Bentonite open water lining as an optional project, which is approximately 9% of the total.

4.0 Next Steps

Following this study, the next phase of the project should include preliminary design (Section 4.1) and environmental review (e.g., CEQA and permitting) (Section 4.2).

4.1 Preliminary Design

Preliminary design may include preliminary engineering and landscape architecture design, preparation of a Preliminary Design Report, and preparation of 30%-complete design drawings. Preliminary design would be followed by final design phases and preparation of final construction documents. Note that ESA is separately coordinating with IRWD on environmental review next steps. Preliminary design analyses may include:

- Groundwater Elevation Data – Continue to collect depth to groundwater at monitoring wells located in the project site on an approximately monthly basis. ESA is scoped to collect groundwater levels through August/September 2023. Note that the central groundwater well is not functioning, but the four wells at the corners of the site are functioning.
- Geotechnical Investigation – Understand the suitability of onsite soils for construction purposes such as berm construction and seepage control through geotechnical data collection, analyses, and recommendations. Assess options and select the preferred approach for seepage control (e.g., imported clay/bentonite layer for freshwater marsh open water area, excavation of onsite clay soils for use in berm construction and perimeter seepage barriers).
- Site Survey – Develop topographic map for the project site and locate property boundaries and easements. Note that a Record Constraints Exhibit for San Joaquin Marsh and Michelson Water Reclamation Plant, including the project site, was prepared by RBF Consulting (2007) for IRWD.
- Cultural Resources – Conduct a pedestrian survey of the 33.4-acre site south of Campus Dr. to identify presence or absence of resources and then update the cultural resource report with those survey results.
- Existing Utility Survey – Survey location and elevation of existing utilities, focusing on site access routes and areas where proposed irrigation piping crosses facilities.
- Irrigation Schedule – Confirm and establish irrigation demand and schedule (e.g., weekly or monthly irrigation) as design criteria.
- Mitigation Irrigation Piping – Refine design for tie in locations and assess performance of the proposed piping in conjunction with the existing piping network and operations.
- Hydraulic Analysis – Hydraulic calculations and/or modeling for mitigation cells, channels, and culvert and weir water control structures.
- Preliminary Design Report – prepare report to document the above and the following design elements:
 - Civil Engineering: piping, water control structures, earthwork/grading
 - Landscape architecture: revegetation and any temporary irrigation
 - Updated preliminary design-level estimates of likely construction quantities and opinions of likely construction costs
- 30%-complete preliminary design drawings for the civil engineering and landscape architecture items listed above.

4.2 CEQA Compliance and Regulatory Permitting

Since the off-site mitigation area was not determined prior to the completion of the FEIR for the Syphon Reservoir Improvement Project, an Addendum to the EIR needs to be prepared that describes the resources associated with the IRWD's San Joaquin Marsh site south of Campus Drive and other affected areas. The addendum will also identify and discuss the potential environmental effects resulting from implementing this conceptual mitigation and prescribe any site-specific mitigation. In addition, the on-site impacts and the proposed mitigation both on-site and off-site are subject to the regulatory authority of CDFW under Section 1600 of the California Fish and Game Code, which will require submittal of a Lake or Streambed Alteration (LSA) Notification and execution of an LSA Agreement between IRWD and CDFW. The off-site mitigation area is completely separated from San Diego Creek and lacks wetland hydrology and hydric soil characteristics and so is not considered to fall under federal regulatory authority as "waters" or "wetlands" as defined by the U.S. Army Corps of Engineers (USACE). Likewise, USACE issued an Approved Jurisdictional Determination stating that the Syphon Reservoir property contained no features considered to meet the federal definition of "waters." Therefore, no permits are needed from USACE. Several years ago, the Santa Ana Regional Water Quality Control Board indicated that it would not need to issue a Water Quality Certification for the SRIP and it is not expected that this position has changed.

5.0 References

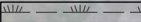
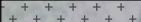
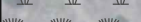


- Environmental Science Associates (ESA) 2014. Peters Canyon Channel Water Capture And Reuse Pipeline Project Reduced Discharge Technical Study Prepared December 2014 for Irvine Ranch Water District Revised April 2015.
- Environmental Science Associates (ESA) 2021a. San Joaquin Marsh Wetland Mitigation Conceptual Design and Feasibility Study for Syphon Reservoir Project: Existing Conditions and Opportunities and Constraints. Memorandum Prepared for Irvine Ranch Water District. December 2021. ESA Project D202100682.00.
- Environmental Science Associates (ESA) 2021b. San Joaquin Marsh Operating Guidelines and Resources Management Plan. Prepared for Irvine Ranch Water District. April 2021. ESA Project D201800226.00.
- Environmental Science Associates (ESA) 2022. San Joaquin Marsh Wetland Mitigation Conceptual Design & Feasibility Study (Syphon Reservoir Project), Responses to U.S. Fish and Wildlife Service Questions. Memorandum Prepared for Irvine Ranch Water District. April 2022. ESA Project D202100682.00.
- Griggs, F.T., and M. Gilbert. 2009. California Riparian Habitat Restoration Handbook. 2nd Edition. Riparian Habitat Joint Venture. <http://www.prbo.org/~rhjvpb/rhjvHandbook.pdf>
- Irvine Ranch Water District and University of California 2020. Agreement Between University Of California And Irvine Ranch Water District Concerning Diversion Of Water Pursuant To Riparian Water Right. Executed March 2020.
- USGS 2011. Orange County (CA) LiDAR from 2010-06-15 to 2010-08-15. NOAA National Centers for Environmental Information, <https://www.fisheries.noaa.gov/inport/item/49646>.

Appendix A

Conceptual Design Drawings

FILE: P:\01 CAD\2021\0000\202100682\00 - San Joaquin Marsh Wetland Mitigation\DWG\PLANTING PLAN.dwg PLOT DATE: 7/7/2023 11:53:59 AM PLOTTED BY: JAMES JACKSON

PLANTING LEGEND

- FRESHWATER MARSH PLANTINGS 
- FRESHWATER MARSH SEEDING 
- RIPARIAN WILLOW SCRUB PLANTING AND SEEDING 
- UPLAND SAGE SCRUB PLANTING AND SEEDING 
- CLASS 2 AB SURFACING 



420 EXCHANGE
SUITE 260
IRVINE, CA 92602
OFFICE - 949.753.7001
WWW.ESASSOC.COM

STAMP

CONCEPTUAL
-
NOT FOR
CONSTRUCTION

CLIENT



SAN JOAQUIN MARSH
WETLAND MITIGATION
CONCEPT DESIGN

PROJECT ADDRESS
LINE 2

PROJECT NAME

REVISIONS
DATE DESCRIPTION

#	DATE	DESCRIPTION

DESIGNED
DRAWN J JACKSON
CHECKED XXX
IN CHARGE XXX
##

PROJECT NUMBER D202100682
ISSUE DATE MM/DD/YY

SCALE IS AS SHOWN WHEN
PLOTTED TO FULL SIZE (22"x34")
1" = 100'

PHASE
CONCEPTUAL
NOT FOR CONSTRUCTION

SHEET TITLE

CONCEPT
PLANTING PLAN

SHEET NUMBER

3

SHEET ### OF ###





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OFFICE - 949.753.7001
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STAMP

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CONSTRUCTION

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SAN JOAQUIN MARSH
WETLAND MITIGATION
CONCEPT DESIGN

PROJECT ADDRESS
LINE 2

PROJECT NAME

REVISIONS

#	DATE	DESCRIPTION

DESIGNED	J JACKSON
DRAWN	J JACKSON
CHECKED	XXX
IN CHARGE	XXX
	### ##

PROJECT NUMBER D202100682

ISSUE DATE MM/DD/YY

SCALE IS AS SHOWN WHEN
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PHASE

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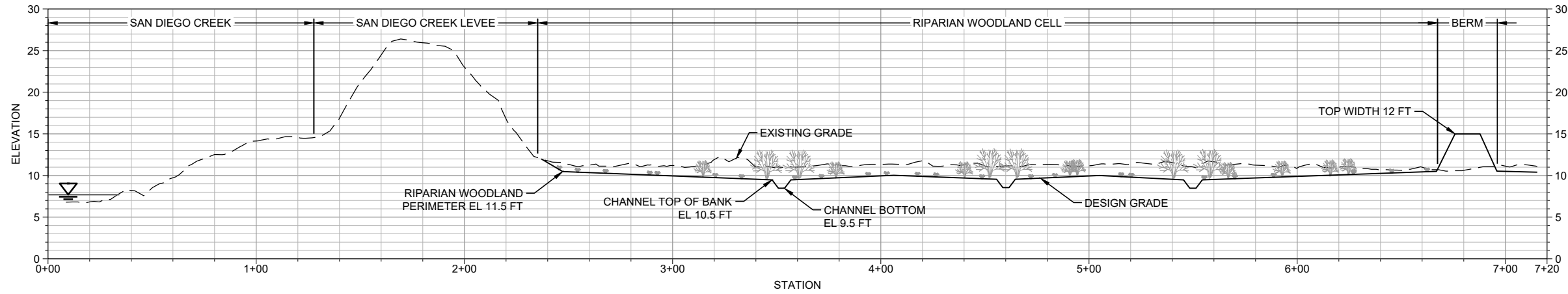
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TYPICAL
SECTIONS

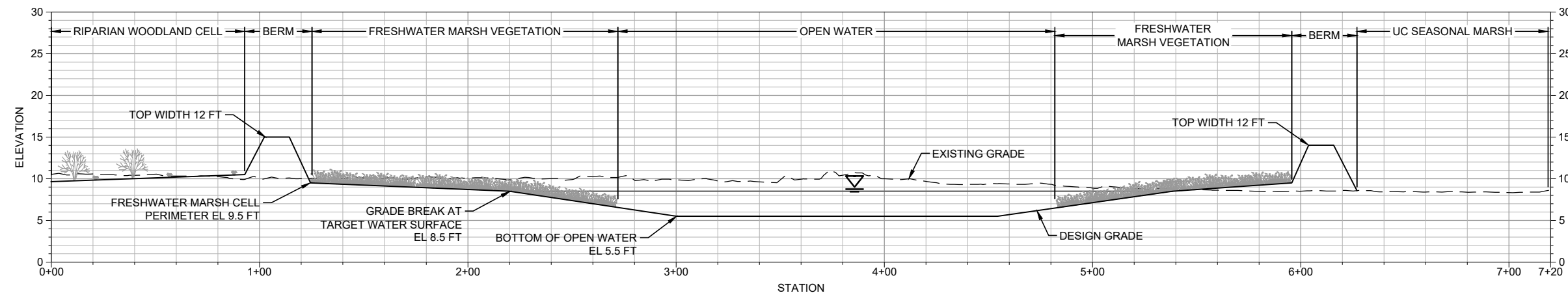
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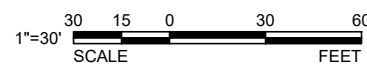
SHEET ### OF ###



A
2
RIPARIAN WOODLAND CELL
TYPICAL SECTION SCALE: 1" = 30'
4:1 VERT. EXAG.



B
2
FRESHWATER MARSH CELL
TYPICAL SECTION SCALE: 1" = 30'
4:1 VERT. EXAG.



Appendix B

Water Demand Estimate

Water Demand Estimate

ESA (2021b and 2022) estimated water demand for the proposed mitigation based on evapotranspiration rates. The evapotranspiration estimate is documented below using text adapted from the San Joaquin Marsh Operating Guidelines and Resource Management Plan (ESA 2021b).

The proposed mitigation will support a range of wetland and riparian habitats including willows and mulefat riparian woodland and open water. ESA estimated the water needed to support the proposed wetland and riparian habitat by estimating evapotranspiration (ET) for the main land cover. Evapotranspiration rate for a given vegetation type (ET_v) is estimated by multiplying a standard reference cover ET rate (ET_o) by a vegetation coefficient K_v . ET_o is comparable to the open water evaporation rate.

$$ET_v = ET_o \times K_v$$

Long term estimates of ET_o are published at weather stations that are part of the California Irrigation Management Information System (CIMIS). The two closest CIMIS stations to the SJM (located 5 miles inland of the coast) are Station 75 in Irvine (7 miles east of the site and 10 miles from the coast), and Station 174 at Long Beach (17 miles from SJM and 4 miles from the coast). ET_o estimates from Irvine are 13% higher than those from Long Beach, likely reflecting the slightly more inland climate. ET_o values for SJM likely lie between the two CIMIS stations, but to be conservative in estimating water needs ESA used the higher Irvine station values. ESA downloaded long term average monthly ET_o rates to develop riparian ET estimates for SJM. Monthly vegetation coefficients (K_v) were obtained from a long-term study of ET rates from riparian and wetland vegetation in the San Joaquin Valley (Howes et. al., 2015). Although the measurements were made in the Central Valley, the authors state that the resulting vegetation coefficients are transferable to sites across California when adjusted for local ET_o . Howes et. al. calculated vegetation coefficients based on a range of field and remote sensing experiments, for a range of species under moisture-limited and non-limited conditions. For ESA's study, two estimates of ET_v were made to bookend the likely range of values; a high estimate based on small-stand permanent wetland and a low estimate based on large-stand riparian woodland. Small stands are defined in Howes et. al. as areas of vegetation less than 15 acres surrounded by open space, and have higher ET rates than large vegetation stands due to their higher edge to surface area ratio. Permanent wetland has a higher ET rate than riparian woodland due to more available soil moisture. The proposed mitigation will likely have an ET rate between these two bookends since it is a mixture of different vegetation types and will have a range of soil moistures across the year, but the small-stand permanent wetland rate should provide a conservative (high) estimate of its water uptake. ESA estimated ET_v as shown in Table B1. Monthly ET_v is shown in Figure B1.

TABLE B1
ESTIMATED RANGE OF POTENTIAL ANNUAL EVAPOTRANSPIRATION RATES FOR PROPOSED MITIGATION.

	Units	Small stand permanent wetland	Large stand riparian
Annual Reference Evapotranspiration E_{t0}	mm	1,273	
Annual Vegetation Evapotranspiration E_{tv}	mm	1,899	1,268
Marsh Area (acres)	Acres	30	30
Average Annual Evapotranspiration	Acre-feet	187	125
	Acre-feet per acre	6.2	4.2
	Million gallons (MG)	61	41
	MG per day (MGD)	0.17	0.11
	Cubic feet per second (cfs)	0.26	0.17

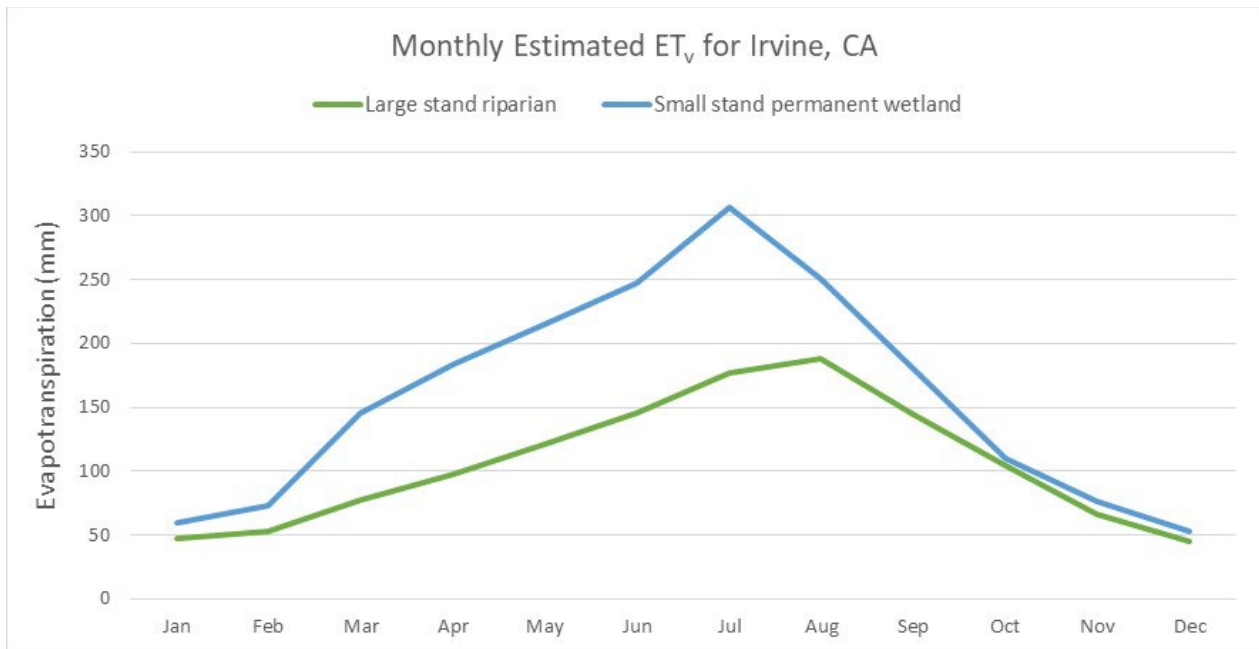


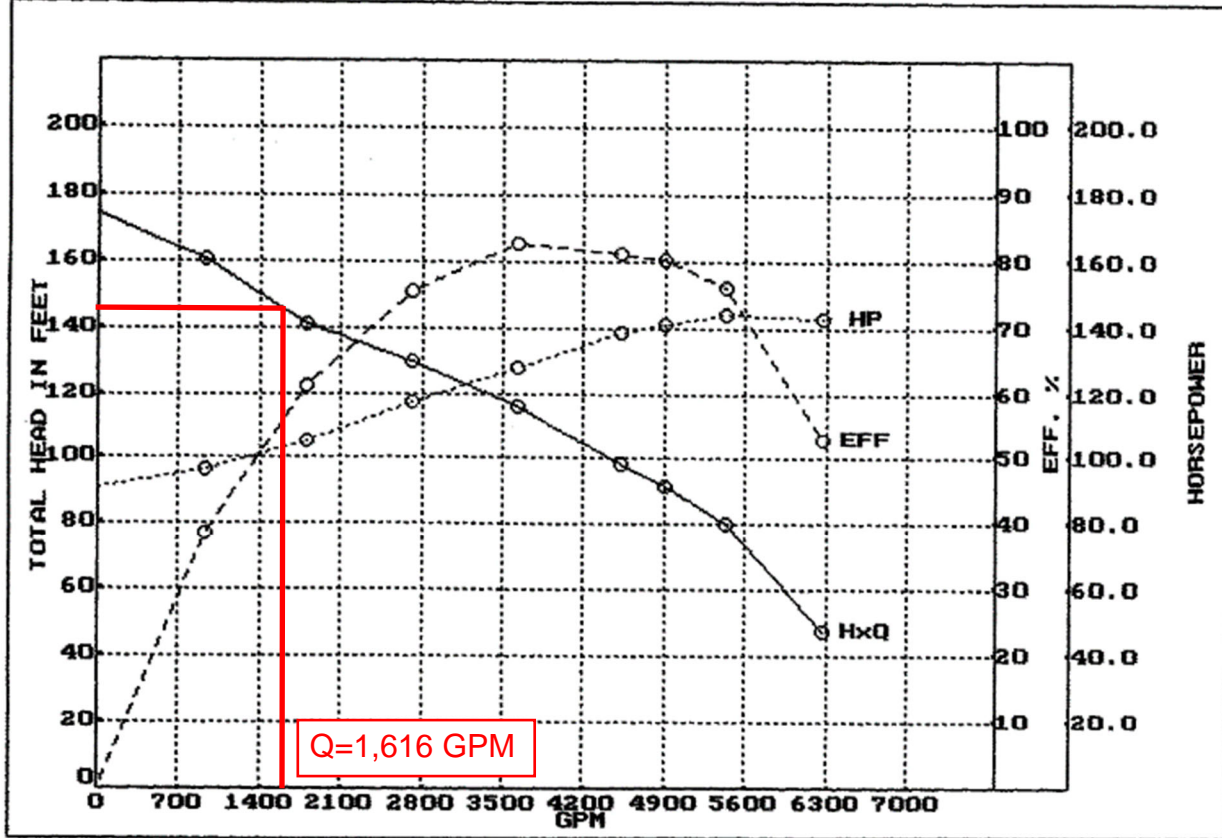
Figure B1
 Estimated range of monthly evapotranspiration rates for San Joaquin Marsh

The resulting average annual water demand ranges from 41 to 61 MG per year assuming large-scale riparian and small-stand permanent wetland covers, respectively. The equivalent flow rates are 0.17 – 0.26 cfs averaged over the year. Note that this reflects water uptake by the plants: because of percolation and other losses more water would need to be delivered to the mitigation to support this demand. See Section 3.2.1 for further discussion.

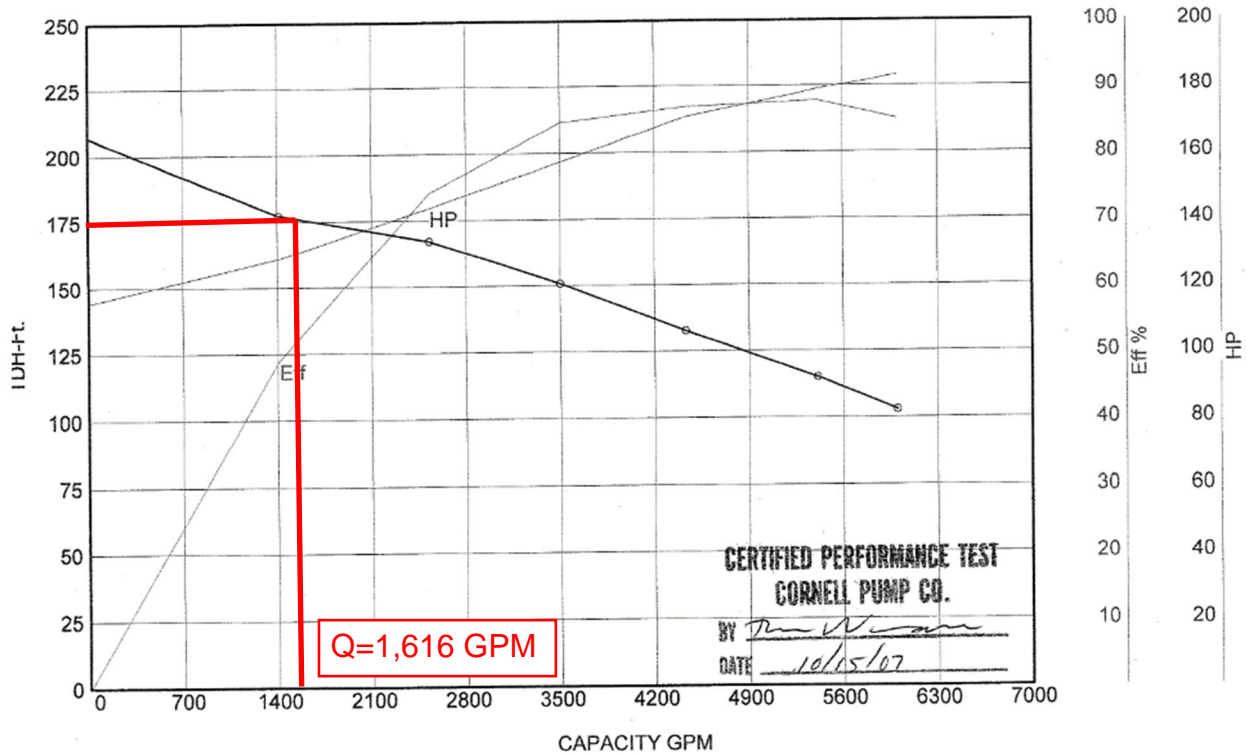
Appendix C

Pump Performance Curves

TEST NUMBER: 21593
 10NHTA UMS 20.25" Trim ,0° Adjusted To 1050 RPM, By Affinity Law
 TEKRAULICS SN 117461 JN 53177 1/3/01
 DESIGN POINT 5400 GPM @ 105 FT TDH



CORNELL PUMP COMPANY PERFORMANCE TEST
 Test Number: 29809 Date: 10/15/2007 S/N: 148763
 10NHTA SUB 20.25" Impeller Diameter
 TEKRAULICS SALES ORDER# 76761
 DESIGN POINT = 5400 GPM @ 105 FT. TDH



Appendix D

Pipe Calculations

SJM Wetland Mitigation

Pipe Hydraulic Calculations

ESA
April, 2023

Pipe Dia (in)	OD (in)	ID (in)	ID (ft)	Area, A (sf)	Velocity, V (fps)	Specific roughness, ε (ft)	Water kinematic viscosity (40° F), ν (fps)	Reynold's #, Re	Relative roughness, ε/D	Darcy friction factor, f (Moody)
6	6.9	5.86	0.49	0.1873	19.221	0.000005	0.00001664	5.6408E+05	0.0000102	0.0131
8	9.05	7.68	0.64	0.3217	11.191			4.3041E+05	0.0000078	0.0135
10	11.1	9.42	0.79	0.4840	7.438			3.5091E+05	0.0000064	0.0141
12	13.2	11.2	0.93	0.6842	5.262			2.9514E+05	0.0000054	0.0146
16	17.4	14.85	1.24	1.2028	2.993			2.2259E+05	0.0000040	0.0153
24	25.8	21.89	1.82	2.6135	1.377			1.5101E+05	0.0000027	0.0166
18	19.5	17.2	1.43	1.6136	2.231			1.9218E+05	0.0000035	0.0160

Project design flowrate, Q	3.6 cfs 1615.68 gpm
Acceleration of gravity, g	32.0881 ft/s ²
Design PVC friction, Ch	120
Typical city distribution velocity, V	2-7 fps
Reynold's #, Re	Re=DV/ν
Hazen-Williams friction:	$(3.022L(V^{1.85})/((Ch^{1.85})(D^{1.17})))$
Darcy friction:	$(fLv^2)/(2Dg)$

Pipe Segment	Alignment Alternative	Length, L (ft)	Major friction head (ft)	
			Hazen-Williams	Darcy
Existing 18"	Campus Drive	30	0.04	0.03
	SJM Trail	2255	2.81	1.95
12" mainline	Campus Drive	3335	33.58	22.51
	SJM Trail	2824	28.43	19.06
10" project service	Campus Drive	63	1.47	0.98
	SJM Trail	31	0.73	0.48
10" UC Pond service	Campus Drive	1496	34.99	23.17
	SJM Trail	1496	34.99	23.17

Alignment Alternative	Total Hazen-Williams major friction head, ft	Safety factor	Friction head, ft	Elevation across overall pipe length		Static head, ft	Total dynamic head, ft
				EL lowest, ft	EL highest, ft		
Campus Drive	70.0821	1.25	87.6026	2	32	30	118
SJM Trail	66.9616		83.7021	2	32	30	114

Appendix B

Air Quality and Greenhouse Gas Emissions Calculations

**B-1 SRIP Off-Site Mitigation
Construction Emissions**

SRIP Off-Site Mitigation Detailed Report

Table of Contents

1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
 - 2.2. Construction Emissions by Year, Unmitigated
 - 2.3. Construction Emissions by Year, Mitigated
3. Construction Emissions Details
 - 3.1. Site Preparation (2025) - Unmitigated
 - 3.2. Site Preparation (2025) - Mitigated
 - 3.3. Site Planting (2026) - Unmitigated
 - 3.4. Site Planting (2026) - Mitigated
 - 3.5. Site Planting (2027) - Unmitigated

3.6. Site Planting (2027) - Mitigated

3.7. Channels an Berns (2025) - Unmitigated

3.8. Channels an Berns (2025) - Mitigated

3.9. Irrigation Infrastructure (2025) - Unmitigated

3.10. Irrigation Infrastructure (2025) - Mitigated

3.11. Irrigation Infrastructure (2026) - Unmitigated

3.12. Irrigation Infrastructure (2026) - Mitigated

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SRIP Off-Site Mitigation
Construction Start Date	9/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	17.2
Location	33.65701266292483, -117.84980452604933
County	Orange
City	Irvine
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5998
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	30.6	Acre	30.6	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.80	18.2	15.9	0.05	0.64	3.61	4.25	0.60	1.60	2.20	—	6,756	6,756	0.41	0.59	7.85	6,951
Mit.	0.41	6.37	18.7	0.05	0.10	3.61	3.71	0.10	1.60	1.70	—	6,756	6,756	0.41	0.59	7.85	6,951
% Reduced	77%	65%	-17%	—	84%	—	13%	83%	—	22%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.89	51.1	44.9	0.14	1.75	6.27	8.03	1.62	2.22	3.84	—	17,957	17,957	1.08	1.58	0.58	18,455
Mit.	1.39	21.3	50.9	0.14	0.34	6.27	6.61	0.33	2.22	2.54	—	17,957	17,957	1.08	1.58	0.58	18,455
% Reduced	71%	58%	-13%	—	81%	—	18%	80%	—	34%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.77	8.39	7.16	0.02	0.28	1.28	1.56	0.26	0.48	0.74	—	3,231	3,231	0.20	0.30	1.79	3,328
Mit.	0.21	3.43	8.51	0.02	0.05	1.28	1.34	0.05	0.48	0.53	—	3,231	3,231	0.20	0.30	1.79	3,328
% Reduced	73%	59%	-19%	—	81%	—	14%	80%	—	28%	—	—	—	—	—	—	—

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.14	1.53	1.31	< 0.005	0.05	0.23	0.29	0.05	0.09	0.13	—	535	535	0.03	0.05	0.30	551
Mit.	0.04	0.63	1.55	< 0.005	0.01	0.23	0.24	0.01	0.09	0.10	—	535	535	0.03	0.05	0.30	551
% Reduced	73%	59%	-19%	—	81%	—	14%	80%	—	28%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.80	18.2	15.9	0.05	0.64	3.61	4.25	0.60	1.60	2.20	—	6,756	6,756	0.41	0.59	7.85	6,951
2026	0.14	0.31	2.20	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	709	709	0.02	0.05	2.30	725
2027	0.12	0.30	2.07	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	697	697	0.01	0.04	2.07	712
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.89	51.1	44.9	0.14	1.75	6.27	8.03	1.62	2.22	3.84	—	17,957	17,957	1.08	1.58	0.58	18,455
2026	1.93	15.9	17.4	0.03	0.59	1.10	1.69	0.54	0.27	0.81	—	4,194	4,194	0.17	0.20	0.13	4,258
2027	0.12	0.31	1.79	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	672	672	0.02	0.04	0.05	686
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.77	8.39	7.16	0.02	0.28	1.28	1.56	0.26	0.48	0.74	—	3,231	3,231	0.20	0.30	1.79	3,328
2026	0.30	2.02	3.09	< 0.005	0.07	0.43	0.50	0.06	0.10	0.17	—	857	857	0.03	0.05	0.79	873
2027	0.03	0.08	0.44	< 0.005	< 0.005	0.13	0.13	< 0.005	0.03	0.03	—	159	159	< 0.005	0.01	0.21	163
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.14	1.53	1.31	< 0.005	0.05	0.23	0.29	0.05	0.09	0.13	—	535	535	0.03	0.05	0.30	551
2026	0.05	0.37	0.56	< 0.005	0.01	0.08	0.09	0.01	0.02	0.03	—	142	142	< 0.005	0.01	0.13	145

2027	0.01	0.01	0.08	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	27.0
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2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.41	6.37	18.7	0.05	0.10	3.61	3.71	0.10	1.60	1.70	—	6,756	6,756	0.41	0.59	7.85	6,951
2026	0.14	0.31	2.20	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	709	709	0.02	0.05	2.30	725
2027	0.12	0.30	2.07	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	697	697	0.01	0.04	2.07	712
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.39	21.3	50.9	0.14	0.34	6.27	6.61	0.33	2.22	2.54	—	17,957	17,957	1.08	1.58	0.58	18,455
2026	0.68	7.26	17.0	0.03	0.11	1.10	1.21	0.11	0.27	0.38	—	4,194	4,194	0.17	0.20	0.13	4,258
2027	0.12	0.31	1.79	< 0.005	< 0.005	0.57	0.58	< 0.005	0.14	0.14	—	672	672	0.02	0.04	0.05	686
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.21	3.43	8.51	0.02	0.05	1.28	1.34	0.05	0.48	0.53	—	3,231	3,231	0.20	0.30	1.79	3,328
2026	0.15	1.02	3.04	< 0.005	0.01	0.43	0.45	0.01	0.10	0.12	—	857	857	0.03	0.05	0.79	873
2027	0.03	0.08	0.44	< 0.005	< 0.005	0.13	0.13	< 0.005	0.03	0.03	—	159	159	< 0.005	0.01	0.21	163
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.04	0.63	1.55	< 0.005	0.01	0.23	0.24	0.01	0.09	0.10	—	535	535	0.03	0.05	0.30	551
2026	0.03	0.19	0.56	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	142	142	< 0.005	0.01	0.13	145
2027	0.01	0.01	0.08	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	27.0

3. Construction Emissions Details

3.1. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.69	13.9	13.5	0.03	0.60	—	0.60	0.55	—	0.55	—	3,136	3,136	0.13	0.03	—	3,147
Dust From Material Movement	—	—	—	—	—	2.57	2.57	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.84	0.81	< 0.005	0.04	—	0.04	0.03	—	0.03	—	189	189	0.01	< 0.005	—	190
Dust From Material Movement	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.3	31.3	< 0.005	< 0.005	—	31.4

Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.04	0.03	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	133	133	< 0.005	< 0.005	0.50	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.07	4.24	1.88	0.02	0.04	0.90	0.95	0.04	0.25	0.30	—	3,487	3,487	0.28	0.56	7.35	3,670
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.72	7.72	< 0.005	< 0.005	0.01	7.82
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.27	0.11	< 0.005	< 0.005	0.05	0.06	< 0.005	0.02	0.02	—	210	210	0.02	0.03	0.19	221
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	34.8	34.8	< 0.005	0.01	0.03	36.6

3.2. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	2.10	16.3	0.03	0.06	—	0.06	0.06	—	0.06	—	3,136	3,136	0.13	0.03	—	3,147
Dust From Material Movement	—	—	—	—	—	2.57	2.57	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.13	0.98	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	189	189	0.01	< 0.005	—	190
Dust From Material Movement	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.18	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.3	31.3	< 0.005	< 0.005	—	31.4
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	133	133	< 0.005	< 0.005	0.50	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.07	4.24	1.88	0.02	0.04	0.90	0.95	0.04	0.25	0.30	—	3,487	3,487	0.28	0.56	7.35	3,670
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.72	7.72	< 0.005	< 0.005	0.01	7.82
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.27	0.11	< 0.005	< 0.005	0.05	0.06	< 0.005	0.02	0.02	—	210	210	0.02	0.03	0.19	221
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	34.8	34.8	< 0.005	0.01	0.03	36.6

3.3. Site Planting (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	2.11	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	521	521	0.01	0.02	1.81	528
Vendor	< 0.005	0.19	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	188	188	0.01	0.03	0.49	197
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	1.82	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	496	496	0.01	0.02	0.05	502
Vendor	< 0.005	0.20	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	188	188	0.01	0.03	0.01	196
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.24	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	328	328	< 0.005	0.01	0.51	333
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	123	123	0.01	0.02	0.14	128
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54.4	54.4	< 0.005	< 0.005	0.08	55.1
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	20.4	20.4	< 0.005	< 0.005	0.02	21.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Site Planting (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	2.11	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	521	521	0.01	0.02	1.81	528
Vendor	< 0.005	0.19	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	188	188	0.01	0.03	0.49	197
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.14	1.82	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	496	496	0.01	0.02	0.05	502

Vendor	< 0.005	0.20	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	188	188	0.01	0.03	0.01	196
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.24	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	328	328	< 0.005	0.01	0.51	333
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	123	123	0.01	0.02	0.14	128
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54.4	54.4	< 0.005	< 0.005	0.08	55.1
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	20.4	20.4	< 0.005	< 0.005	0.02	21.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Site Planting (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.98	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	512	512	0.01	0.02	1.62	520	
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.44	193	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.70	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	487	487	0.01	0.02	0.04	493	
Vendor	< 0.005	0.19	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.01	193	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.03	0.03	0.42	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.16	118	

Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	43.4	43.4	< 0.005	0.01	0.04	45.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	19.2	19.2	< 0.005	< 0.005	0.03	19.5
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.18	7.18	< 0.005	< 0.005	0.01	7.49
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Site Planting (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.98	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	512	512	0.01	0.02	1.62	520
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.44	193
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.12	1.70	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	487	487	0.01	0.02	0.04	493
Vendor	< 0.005	0.19	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.01	193
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.42	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.16	118
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	43.4	43.4	< 0.005	0.01	0.04	45.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	19.2	19.2	< 0.005	< 0.005	0.03	19.5
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.18	7.18	< 0.005	< 0.005	0.01	7.49
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Channels an Berns (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	23.9	22.9	0.05	1.01	—	1.01	0.93	—	0.93	—	5,639	5,639	0.23	0.05	—	5,658
Dust From Material Movement	—	—	—	—	—	3.19	3.19	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	4.32	4.14	0.01	0.18	—	0.18	0.17	—	0.17	—	1,020	1,020	0.04	0.01	—	1,023
Dust From Material Movement	—	—	—	—	—	0.58	0.58	—	0.25	0.25	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.09	0.79	0.76	< 0.005	0.03	—	0.03	0.03	—	0.03	—	169	169	0.01	< 0.005	—	169
Dust From Material Movement	—	—	—	—	—	0.11	0.11	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.11	1.36	0.00	0.00	0.37	0.37	0.00	0.09	0.09	—	354	354	< 0.005	0.01	0.04	358
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	63.8	63.8	< 0.005	0.01	< 0.005	66.5
Hauling	0.17	10.6	4.54	0.06	0.11	2.17	2.28	0.11	0.61	0.71	—	8,372	8,372	0.68	1.35	0.46	8,793
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	64.8	64.8	< 0.005	< 0.005	0.11	65.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	0.01	12.0
Hauling	0.03	1.93	0.82	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,513	1,513	0.12	0.24	1.38	1,591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.91	1.91	< 0.005	< 0.005	< 0.005	1.99
Hauling	0.01	0.35	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	251	251	0.02	0.04	0.23	263

3.8. Channels an Berns (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
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Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	3.60	29.8	0.05	0.12	—	0.12	0.11	—	0.11	—	5,639	5,639	0.23	0.05	—	5,658
Dust From Material Movement	—	—	—	—	—	3.19	3.19	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.65	5.39	0.01	0.02	—	0.02	0.02	—	0.02	—	1,020	1,020	0.04	0.01	—	1,023
Dust From Material Movement	—	—	—	—	—	0.58	0.58	—	0.25	0.25	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.12	0.98	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	169	169	0.01	< 0.005	—	169
Dust From Material Movement	—	—	—	—	—	0.11	0.11	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.11	1.36	0.00	0.00	0.37	0.37	0.00	0.09	0.09	—	354	354	< 0.005	0.01	0.04	358
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	63.8	63.8	< 0.005	0.01	< 0.005	66.5
Hauling	0.17	10.6	4.54	0.06	0.11	2.17	2.28	0.11	0.61	0.71	—	8,372	8,372	0.68	1.35	0.46	8,793
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	64.8	64.8	< 0.005	< 0.005	0.11	65.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	0.01	12.0
Hauling	0.03	1.93	0.82	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,513	1,513	0.12	0.24	1.38	1,591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.91	1.91	< 0.005	< 0.005	< 0.005	1.99
Hauling	0.01	0.35	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	251	251	0.02	0.04	0.23	263

3.9. Irrigation Infrastructure (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.78	15.4	14.5	0.02	0.63	—	0.63	0.58	—	0.58	—	2,413	2,413	0.10	0.02	—	2,421

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.93	0.88	< 0.005	0.04	—	0.04	0.04	—	0.04	—	146	146	0.01	< 0.005	—	147
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.17	0.16	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.2	24.2	< 0.005	< 0.005	—	24.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.16	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	303	303	< 0.005	0.01	0.03	307
Vendor	0.01	0.28	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.02	266
Hauling	0.01	0.70	0.30	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	558	558	0.05	0.09	0.03	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.6	18.6	< 0.005	< 0.005	0.03	18.9
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.02	16.2
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	33.9	33.9	< 0.005	0.01	0.03	35.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.09	3.09	< 0.005	< 0.005	0.01	3.13
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.67
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.60	5.60	< 0.005	< 0.005	0.01	5.89

3.10. Irrigation Infrastructure (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	5.91	13.5	0.02	0.10	—	0.10	0.10	—	0.10	—	2,413	2,413	0.10	0.02	—	2,421
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.36	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	146	146	0.01	< 0.005	—	147
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.2	24.2	< 0.005	< 0.005	—	24.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.08	0.09	1.16	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	303	303	< 0.005	0.01	0.03	307
Vendor	0.01	0.28	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	255	255	0.01	0.04	0.02	266
Hauling	0.01	0.70	0.30	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	558	558	0.05	0.09	0.03	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.6	18.6	< 0.005	< 0.005	0.03	18.9
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.02	16.2
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	33.9	33.9	< 0.005	0.01	0.03	35.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.09	3.09	< 0.005	< 0.005	0.01	3.13
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.67
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.60	5.60	< 0.005	< 0.005	0.01	5.89

3.11. Irrigation Infrastructure (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.70	14.5	14.0	0.02	0.58	—	0.58	0.53	—	0.53	—	2,413	2,413	0.10	0.02	—	2,422
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.20	1.68	1.61	< 0.005	0.07	—	0.07	0.06	—	0.06	—	279	279	0.01	< 0.005	—	280
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	1.09	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	297	297	< 0.005	0.01	0.03	301
Vendor	< 0.005	0.27	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	251	251	0.01	0.04	0.02	262
Hauling	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.8	34.8	< 0.005	< 0.005	0.05	35.3
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.0	29.0	< 0.005	< 0.005	0.03	30.3
Hauling	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	63.3	63.3	< 0.005	0.01	0.06	66.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.76	5.76	< 0.005	< 0.005	0.01	5.84
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.80	4.80	< 0.005	< 0.005	0.01	5.01
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.5	10.5	< 0.005	< 0.005	0.01	11.0

3.12. Irrigation Infrastructure (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.45	5.89	13.5	0.02	0.10	—	0.10	0.10	—	0.10	—	2,413	2,413	0.10	0.02	—	2,422
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.68	1.56	< 0.005	0.01	—	0.01	0.01	—	0.01	—	279	279	0.01	< 0.005	—	280
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.12	0.29	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	46.1	46.1	< 0.005	< 0.005	—	46.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	1.09	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	297	297	< 0.005	0.01	0.03	301
Vendor	< 0.005	0.27	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	251	251	0.01	0.04	0.02	262

Hauling	0.01	0.68	0.29	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	548	548	0.04	0.09	0.03	575
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.8	34.8	< 0.005	< 0.005	0.05	35.3
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	29.0	29.0	< 0.005	< 0.005	0.03	30.3
Hauling	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	63.3	63.3	< 0.005	0.01	0.06	66.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.76	5.76	< 0.005	< 0.005	0.01	5.84
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.80	4.80	< 0.005	< 0.005	0.01	5.01
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.5	10.5	< 0.005	< 0.005	0.01	11.0

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	9/1/2025	9/30/2025	5.00	22.0	—
Site Planting	Site Preparation	2/1/2026	4/30/2027	5.00	325	—
Channels an Berns	Grading	10/1/2025	12/31/2025	5.00	66.0	—
Irrigation Infrastructure	Building Construction	12/1/2025	2/28/2026	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Other Construction Equipment	Diesel	Average	1.00	8.00	31.0	0.42
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Site Preparation	Off-Highway Trucks	Diesel	Average	1.00	8.00	376	0.38
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Channels an Berns	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Channels an Berns	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Channels an Berns	Graders	Diesel	Average	1.00	8.00	148	0.41
Channels an Berns	Off-Highway Trucks	Diesel	Average	1.00	8.00	376	0.38
Channels an Berns	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Channels an Berns	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Channels an Berns	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Irrigation Infrastructure	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Irrigation Infrastructure	Dumpers/Tenders	Diesel	Average	1.00	8.00	16.0	0.38

Irrigation Infrastructure	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Irrigation Infrastructure	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Irrigation Infrastructure	Pumps	Diesel	Average	1.00	8.00	11.0	0.74
Irrigation Infrastructure	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Irrigation Infrastructure	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Irrigation Infrastructure	Trenchers	Diesel	Average	1.00	8.00	40.0	0.50
Irrigation Infrastructure	Skid Steer Loaders	Diesel	Average	2.00	2.00	71.0	0.37

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Other Construction Equipment	Diesel	Tier 4 Final	1.00	8.00	31.0	0.42
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	8.00	84.0	0.37
Site Preparation	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	8.00	376	0.38
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Channels an Berns	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Channels an Berns	Excavators	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Channels an Berns	Graders	Diesel	Tier 4 Final	1.00	8.00	148	0.41
Channels an Berns	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	8.00	376	0.38
Channels an Berns	Scrapers	Diesel	Tier 4 Final	1.00	8.00	423	0.48
Channels an Berns	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	8.00	84.0	0.37
Channels an Berns	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Irrigation Infrastructure	Concrete/Industrial Saws	Diesel	Tier 4 Final	1.00	8.00	33.0	0.73
Irrigation Infrastructure	Dumpers/Tenders	Diesel	Average	1.00	8.00	16.0	0.38
Irrigation Infrastructure	Excavators	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Irrigation Infrastructure	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43

Irrigation Infrastructure	Pumps	Diesel	Average	1.00	8.00	11.0	0.74
Irrigation Infrastructure	Rollers	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Irrigation Infrastructure	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Irrigation Infrastructure	Trenchers	Diesel	Tier 4 Final	1.00	8.00	40.0	0.50
Irrigation Infrastructure	Skid Steer Loaders	Diesel	Average	2.00	2.00	71.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	10.2	HHDT,MHDT
Site Preparation	Hauling	50.0	20.0	HHDT
Site Preparation	Onsite truck	0.00	—	HHDT
Channels an Berns	—	—	—	—
Channels an Berns	Worker	28.0	18.5	LDA,LDT1,LDT2
Channels an Berns	Vendor	2.00	10.2	HHDT,MHDT
Channels an Berns	Hauling	120	20.0	HHDT
Channels an Berns	Onsite truck	0.00	—	HHDT
Irrigation Infrastructure	—	—	—	—
Irrigation Infrastructure	Worker	24.0	18.5	LDA,LDT1,LDT2
Irrigation Infrastructure	Vendor	8.00	10.2	HHDT,MHDT
Irrigation Infrastructure	Hauling	8.00	20.0	HHDT
Irrigation Infrastructure	Onsite truck	0.00	—	HHDT
Site Planting	—	—	—	—
Site Planting	Worker	40.0	18.5	LDA,LDT1,LDT2

Site Planting	Vendor	6.00	10.2	HHDT,MHDT
Site Planting	Hauling	0.00	20.0	HHDT
Site Planting	Onsite truck	0.00	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	10.2	HHDT,MHDT
Site Preparation	Hauling	50.0	20.0	HHDT
Site Preparation	Onsite truck	0.00	—	HHDT
Channels an Berns	—	—	—	—
Channels an Berns	Worker	28.0	18.5	LDA,LDT1,LDT2
Channels an Berns	Vendor	2.00	10.2	HHDT,MHDT
Channels an Berns	Hauling	120	20.0	HHDT
Channels an Berns	Onsite truck	0.00	—	HHDT
Irrigation Infrastructure	—	—	—	—
Irrigation Infrastructure	Worker	24.0	18.5	LDA,LDT1,LDT2
Irrigation Infrastructure	Vendor	8.00	10.2	HHDT,MHDT
Irrigation Infrastructure	Hauling	8.00	20.0	HHDT
Irrigation Infrastructure	Onsite truck	0.00	—	HHDT
Site Planting	—	—	—	—
Site Planting	Worker	40.0	18.5	LDA,LDT1,LDT2
Site Planting	Vendor	6.00	10.2	HHDT,MHDT
Site Planting	Hauling	0.00	20.0	HHDT
Site Planting	Onsite truck	0.00	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
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5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	18,000	11.0	0.00	—
Site Planting	1,600	1,500	0.00	0.00	—
Channels an Berns	22,000	29,000	132	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	349	0.03	< 0.005
2026	0.00	346	0.03	< 0.005
2027	0.00	346	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.54	annual days of extreme heat
Extreme Precipitation	3.60	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A

Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	55.4
AQ-PM	57.5
AQ-DPM	86.4
Drinking Water	52.8
Lead Risk Housing	0.28
Pesticides	1.59
Toxic Releases	85.1
Traffic	90.0
Effect Indicators	—
CleanUp Sites	93.2
Groundwater	91.3
Haz Waste Facilities/Generators	90.0
Impaired Water Bodies	98.1
Solid Waste	72.4
Sensitive Population	—
Asthma	10.1
Cardio-vascular	6.75
Low Birth Weights	19.0
Socioeconomic Factor Indicators	—
Education	7.82
Housing	63.3
Linguistic	37.7
Poverty	51.7

Unemployment	41.8
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7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	72.51379443
Employed	66.62389324
Median HI	71.23059156
Education	—
Bachelor's or higher	91.36404466
High school enrollment	100
Preschool enrollment	85.56396766
Transportation	—
Auto Access	54.54895419
Active commuting	23.40562043
Social	—
2-parent households	15.20595406
Voting	31.2074939
Neighborhood	—
Alcohol availability	28.78224047
Park access	6.544334659
Retail density	98.42166046
Supermarket access	67.2783267
Tree canopy	33.37610676
Housing	—
Homeownership	7.391248556

Housing habitability	59.04016425
Low-inc homeowner severe housing cost burden	71.07660721
Low-inc renter severe housing cost burden	81.45771847
Uncrowded housing	70.98678301
Health Outcomes	—
Insured adults	83.98562813
Arthritis	0.0
Asthma ER Admissions	87.8
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	97.8
Cognitively Disabled	88.7
Physically Disabled	85.5
Heart Attack ER Admissions	76.4
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	70.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0

No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	95.4
Children	86.0
Elderly	76.6
English Speaking	43.7
Foreign-born	77.6
Outdoor Workers	94.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	13.3
Traffic Density	90.4
Traffic Access	46.4
Other Indices	—
Hardship	5.6
Other Decision Support	—
2016 Voting	54.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	42.0
Healthy Places Index Score for Project Location (b)	70.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Assumptions based on data provided by the client
Construction: Off-Road Equipment	Project assumptions provided by client see project assumptions for more details on selected equipment
Construction: Trips and VMT	Provided by client see project assumptions for more details

B-2 SRIP Off-Site Mitigation Operational Emissions

SRIP Off-Site Mitigation Ops Detailed Report

Table of Contents

- 1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
 - 2.4. Operations Emissions Compared Against Thresholds
 - 2.5. Operations Emissions by Sector, Unmitigated
 - 2.6. Operations Emissions by Sector, Mitigated
- 4. Operations Emissions Details
 - 4.1. Mobile Emissions by Land Use
 - 4.1.1. Unmitigated
 - 4.1.2. Mitigated
 - 4.2. Energy
 - 4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.3.2. Mitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.4.2. Mitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.5.2. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SRIP Off-Site Mitigation Ops
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	17.2
Location	33.65701266292483, -117.84980452604933
County	Orange
City	Irvine
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5998
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	30.6	Acre	30.6	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	300	301	0.16	0.01	0.93	310
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	289	290	0.16	0.01	0.02	298
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.10	0.06	0.62	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	1.42	153	155	0.15	0.01	0.21	161
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	0.23	25.4	25.6	0.02	< 0.005	0.03	26.6

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
--------	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	300	301	0.16	0.01	0.93	310
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Area	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	289	290	0.16	0.01	0.02	298
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.10	0.06	0.62	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	153	153	0.01	0.01	0.21	156
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.10	0.06	0.62	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	1.42	153	155	0.15	0.01	0.21	161

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	0.23	25.4	25.6	0.02	< 0.005	0.03	26.6

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	300	301	0.16	0.01	0.93	310
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Area	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	1.42	289	290	0.16	0.01	0.02	298
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.10	0.06	0.62	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	153	153	0.01	0.01	0.21	156
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.10	0.06	0.62	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	1.42	153	155	0.15	0.01	0.21	161
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8
Area	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	0.23	25.4	25.6	0.02	< 0.005	0.03	26.6

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Total	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Total	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8
Total	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Total	0.19	0.11	1.22	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	300	300	0.02	0.01	0.93	305
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Total	0.19	0.12	1.16	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	289	289	0.02	0.01	0.02	293
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8
Total	0.02	0.01	0.11	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.03	25.8

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectu ral Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscap e Equipme nt	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consum er Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectu ral Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consum er Products	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectu ral Coatings	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscap e Equipme nt	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Total	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Total	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82
Total	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96

Total	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Total	—	—	—	—	—	—	—	—	—	—	1.42	0.00	1.42	0.14	0.00	—	4.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82
Total	—	—	—	—	—	—	—	—	—	—	0.23	0.00	0.23	0.02	0.00	—	0.82

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
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Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetatio	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
---------	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	23.8	59.9	66.9	12,832	141	354	396	75,818

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	23.8	59.9	66.9	12,832	141	354	396	75,818

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
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0	0.00	0.00	0.00	—
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5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	346	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	346	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	2.63	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	2.63	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
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5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
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5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
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5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)
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5.17. User Defined

Equipment Type	Fuel Type
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5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.54	annual days of extreme heat
Extreme Precipitation	3.60	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	0	0	0	N/A
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The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—

AQ-Ozone	55.4
AQ-PM	57.5
AQ-DPM	86.4
Drinking Water	52.8
Lead Risk Housing	0.28
Pesticides	1.59
Toxic Releases	85.1
Traffic	90.0
Effect Indicators	—
CleanUp Sites	93.2
Groundwater	91.3
Haz Waste Facilities/Generators	90.0
Impaired Water Bodies	98.1
Solid Waste	72.4
Sensitive Population	—
Asthma	10.1
Cardio-vascular	6.75
Low Birth Weights	19.0
Socioeconomic Factor Indicators	—
Education	7.82
Housing	63.3
Linguistic	37.7
Poverty	51.7
Unemployment	41.8

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	72.51379443
Employed	66.62389324
Median HI	71.23059156
Education	—
Bachelor's or higher	91.36404466
High school enrollment	100
Preschool enrollment	85.56396766
Transportation	—
Auto Access	54.54895419
Active commuting	23.40562043
Social	—
2-parent households	15.20595406
Voting	31.2074939
Neighborhood	—
Alcohol availability	28.78224047
Park access	6.544334659
Retail density	98.42166046
Supermarket access	67.2783267
Tree canopy	33.37610676
Housing	—
Homeownership	7.391248556
Housing habitability	59.04016425
Low-inc homeowner severe housing cost burden	71.07660721
Low-inc renter severe housing cost burden	81.45771847
Uncrowded housing	70.98678301

Health Outcomes	—
Insured adults	83.98562813
Arthritis	0.0
Asthma ER Admissions	87.8
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	97.8
Cognitively Disabled	88.7
Physically Disabled	85.5
Heart Attack ER Admissions	76.4
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	70.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	95.4

Children	86.0
Elderly	76.6
English Speaking	43.7
Foreign-born	77.6
Outdoor Workers	94.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	13.3
Traffic Density	90.4
Traffic Access	46.4
Other Indices	—
Hardship	5.6
Other Decision Support	—
2016 Voting	54.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	42.0
Healthy Places Index Score for Project Location (b)	70.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Assumptions based on data provided by the client
Construction: Off-Road Equipment	Project assumptions provided by client see project assumptions for more details on selected equipment
Construction: Trips and VMT	Provided by client see project assumptions for more details

Appendix C

Biological Resources Technical Memorandum – SRIP Off-Site Mitigation



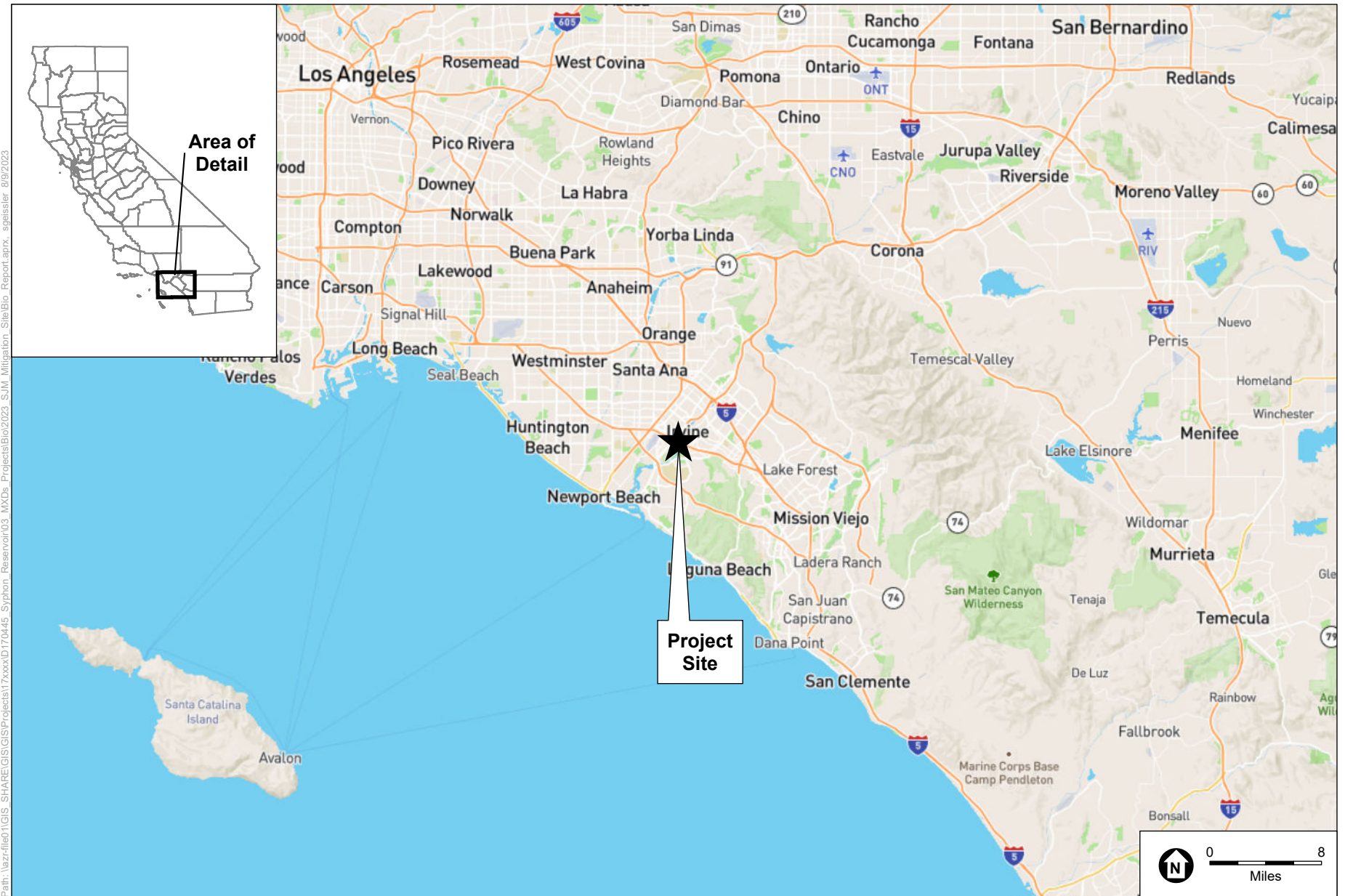
memorandum

date January 2, 2024
to Andy Uk, Environmental Compliance Analyst, IRWD
from Scott Holbrook, Principal Ecologist; Mark Dodero, Senior Restoration Biologist
subject Biological Resources Technical Memorandum – SRIP Off-Site Mitigation

Environmental Science Associates (ESA) has prepared this Biological Resources Technical Memorandum for the Syphon Reservoir Improvement Project (SRIP) Off-Site Mitigation in the City of Irvine, California. The Irvine Ranch Water District (IRWD) is proposing to implement a restoration project on a discrete parcel at the San Joaquin Marsh to provide off-site mitigation for riparian and freshwater marsh habitat impacts resulting from the planned SRIP. The SRIP and its associated environmental effects and requisite mitigation have been documented in accordance with the California Environmental Quality Act (CEQA) and the Final Environmental Impact Report (State Clearinghouse No. 2019080009) was certified on July 27, 2021. Conceptual plans for the off-site mitigation at the San Joaquin Marsh have now been developed and that element of the SRIP now requires an inventory of biotic resources and an evaluation of the potential environmental effects associated with implementing habitat mitigation at this location. This memorandum describes the SRIP Off-Site Mitigation, the methods and results of the biological resources study at the site, and the effects of the SRIP Off-Site Mitigation along with determinations regarding the potential for significant impacts to biological resources to result from mitigation implementation in accordance with CEQA Guidelines. This biological study is focused primarily on the SRIP Off-Site Mitigation site and describes the resources present therein with consideration of adjacent areas regarding the presence and activity of wildlife as may relate to the SRIP Off-Site Mitigation site and the SRIP Off-Site Mitigation.

SRIP Off-Site Mitigation Location

The SRIP Off-Site Mitigation site occupies an approximately 33.4-acre parcel owned by IRWD within a part of the San Joaquin Marsh situated west of the intersection of Campus Drive and University Drive and on the northwest side of San Diego Creek in the City of Irvine, California (**Figure 1 - Regional Location Map, Figure 2 – Local Vicinity Map**). The SRIP Off-Site Mitigation site is bordered by Campus Drive to the northeast and the levee along San Diego Creek to the southeast. The approximately 200-acre University of California (UC) San Joaquin Freshwater Marsh Reserve (UC Marsh Reserve) occupies the entire area adjacent to the west and northwest (Figure 2). The SRIP Off-Site Mitigation site lies within Section 17, Township 6 South, and Range 9 West, on the U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle for Tustin, CA.



SOURCE: ESRI; National Hydrography Dataset; DWR

SRIP Off-Site Mitigation

Figure 1
Regional Location





SOURCE: ESA, 2023

SRIP Off-Site Mitigation



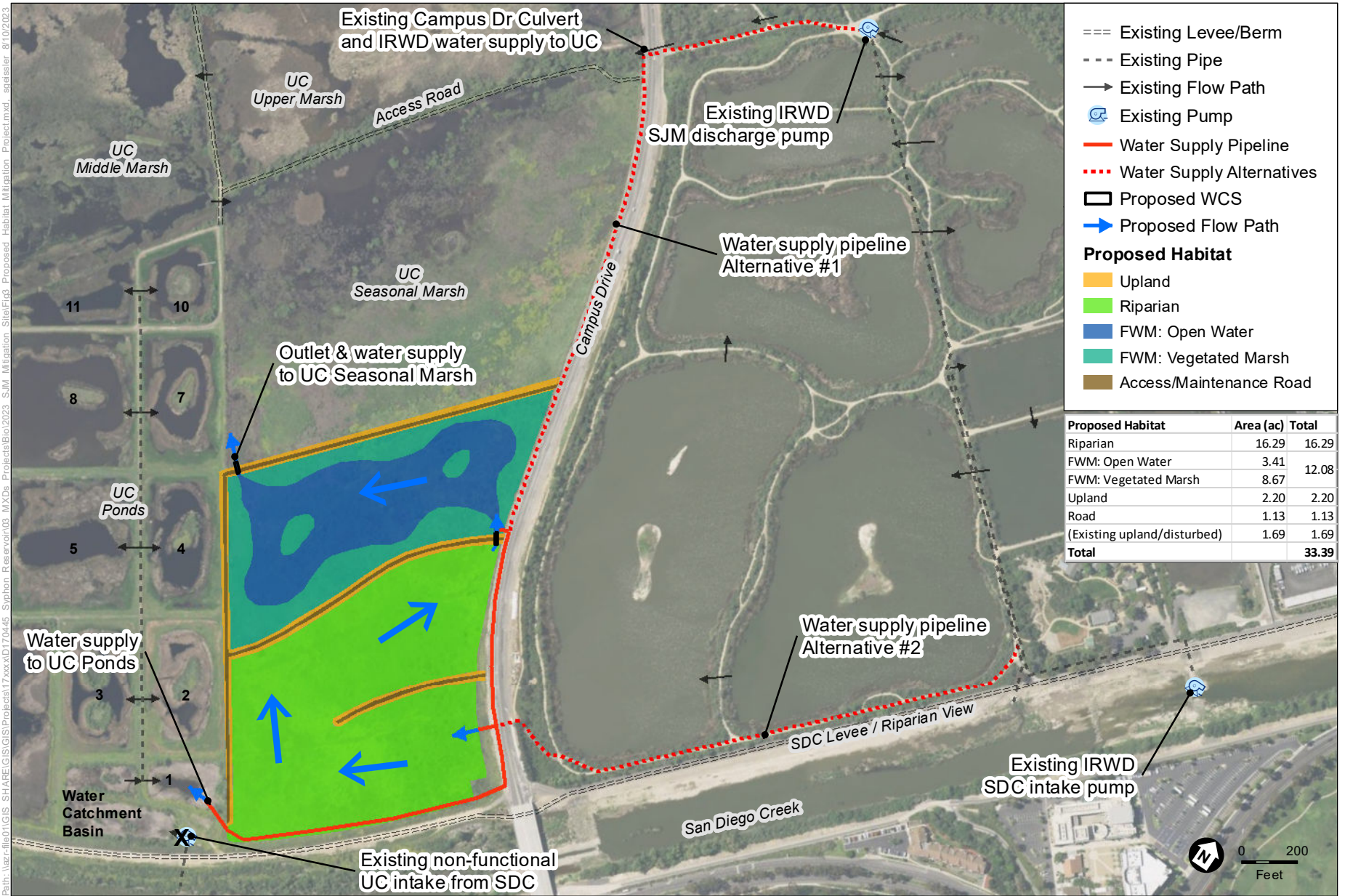
Figure 2
Local Viability Map

SRIP Off-Site Mitigation Description

In coordination with staff at the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), IRWD developed conceptual plans to provide compensatory mitigation to offset impacts to woody riparian and freshwater marsh habitats associated with the implementation of the SRIP. The planned SRIP will increase the storage capacity of the existing Syphon Reservoir from 500 acre-feet to approximately 5,000 acre-feet to serve the community's seasonal and future recycled water needs. Increased use of recycled water will make more drinking water available and help withstand future water shortages. The SRIP FEIR determined that construction of the expanded reservoir would result in impacts to woody riparian and freshwater marsh habitats and stipulated that both on-site riparian/wetland habitat creation and off-site habitat mitigation would be provided to assure that no net loss of such habitats would occur and also to provide appropriate compensation for temporary loss of habitat value (i.e., temporal loss).

At the time the SRIP FEIR was certified, a site had not yet been selected or fully vetted for implementing the off-site riparian and wetland habitat mitigation component. In 2023, after extensive consultation with the wildlife agencies (i.e., USFWS and CDFW) and careful consideration of feasibility issues, the off-site mitigation area for SRIP was selected to be implemented at the 33.4-acre IRWD property in the San Joaquin Marsh south of Campus Drive in Irvine, CA. USFWS and CDFW accepted the overall mitigation package in concept and agreed that the implementation of proposed riparian/wetland mitigation, both on-site as part of the SRIP and off-site at the San Joaquin Marsh site, would adequately compensate for all impacts to riparian and wetland habitat and associated wildlife identified in the SRIP FEIR. The off-site riparian and wetland mitigation component at the San Joaquin Marsh is the subject of this technical report.

The conceptual plan for the SRIP Off-Site Mitigation indicates that final design will include a grading plan that will reduce on-site cut and fill and control the amount of off-site material hauling and construction costs (ESA 2023). SRIP Off-Site Mitigation grading will involve excavation to create open water in the freshwater marsh area and channels in the riparian area, as well as fill to create access berms. Most of the existing site will be cleared of vegetation, except that some patches of native riparian habitat and herbaceous alkali heath may be preserved intact and enhanced through the selected removal of exotics. **Figure 3 – Proposed Habitat Mitigation** depicts the conceptual habitat mitigation design. The proposed mitigation site will be irrigated on a seasonal basis with water supplied from the IRWD San Joaquin Marsh, north of Campus Drive, after being pumped from San Diego Creek. The proposed mitigation plantings will include freshwater marsh, riparian willow scrub and upland sage scrub habitats and will establish both riparian woodland and freshwater marsh habitat. The SRIP Off-Site Mitigation site would be modified by first removing the predominant ruderal (weedy) vegetation and dead material and then by creating channels and berms to form riparian and freshwater marsh cells. Native riparian and freshwater vegetation would then be established using a temporary overhead spray irrigation system. Once native vegetation is established the temporary system will be removed. The site will then rely on supplemental irrigation provided each year during the rainy season in perpetuity via a flow-through system. The San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study, provided under separate cover, presents details the conceptual plan for the site.



SOURCE: IRWD, ESA, NAIP

SRIP Off-Site Mitigation

Note: FWM=Freshwater Marsh, SDC=San Diego Creek, WCS=Water Control Structure

Figure 3
Proposed Habitat Mitigation



As shown on Figure 3, the southeastern portion of the SRIP Off-Site Mitigation site would contain woody riparian habitat and the northwestern portion is planned for freshwater marsh habitat and open water. Irrigation water would enter the SRIP Off-Site Mitigation site from two points along Campus Drive to sustain the riparian habitat cells and the freshwater marsh area. Additionally, IRWD proposes to extend the water supply pipeline along the southeast side of the SRIP Off-Site Mitigation site to provide a new alternative water supply connection to the University of California Natural Reserve System's (UC NRS) San Joaquin Freshwater Marsh Reserve Experimental Ponds which lie directly adjacent to the SRIP Off-Site Mitigation site. This new water supply location, which was coordinated with the UC San Joaquin Marsh Reserve managers, will have the advantage of providing water from IRWD to the UC marsh at a significantly higher elevation than the existing connection from IRWD under Campus Drive. That would provide an advantage for the UC wetland managers to control distribution of water supplied from IRWD at the proposed new input location via gravity rather than pumping from the lower elevation in the marsh, which has historically posed challenges. Berms would be provided along the southwestern and northwest perimeter and also through the center of the SRIP Off-Site Mitigation site (where the marsh and riparian woodland areas are separated) to provide for access/maintenance as well as to define the limit of the mitigation area cells. Prior to and during construction, a silt fence would be securely installed and regularly inspected and maintained along the SRIP Off-Site Mitigation site perimeter to prevent small terrestrial animals, particularly southwestern pond turtles (*Actinemys pallida*), from entering the active construction area.

The proposed SRIP Off-Site Mitigation concept plan involves the establishment of a mix of riparian woodland and freshwater marsh habitats to compensate for impacts to similar habitat that would result from implementation of the SRIP. The off-site riparian/wetland mitigation requirements are that IRWD will provide approximately 9.6 acres of riparian woodland/riparian scrub habitat and approximately 10.66 acres of freshwater marsh. The conceptual plans for the SRIP Off-Site Mitigation at the San Joaquin Marsh show that the proposed habitat mitigation will include approximately 12.08 acres of freshwater marsh and open water, with up to 16.29 acres available for riparian woodland and scrub habitat, which exceeds the requisite off-site mitigation for the SRIP. However, the final plan for the SRIP Off-Site Mitigation will also incorporate protection or replacement of the existing patches of alkali meadow plant community on-site. This plant community, which consists predominantly of alkali heath (*Frankenia salina*) is considered a sensitive resource and is, therefore, planned to be conserved on-site. The inclusion of 0.40 acre of alkali meadow vegetation in the modified final plan will reduce the total area available for riparian woodland and scrub habitat to 15.89 acres of riparian habitat, which still exceeds the 9.6 acres required for the off-site SRIP mitigation. Furthermore, as described below, some of the riparian woodland habitat that will be restored by the proposed SRIP Off-Site Mitigation will be accounted for as replacement for the remnant riparian vegetation that currently exists on-site.

A total of 2.75 acres of remnant willows (1.45 ac.), mixed black willow / tree of heaven patches (0.81 ac.), and mule fat scrub (0.49 ac.) are mapped within the subject property. These remnant riparian communities are in relatively poor condition due to progressive displacement by exotic plants and poor natural hydrology. However, native riparian willow woodland and scrub habitat is considered a sensitive resource, and despite the poor condition of the existing habitat areas, these resources still provide habitat for wildlife. Therefore, the proposed SRIP Off-Site Mitigation will protect the existing vegetation in place where practical and replace any displaced native riparian vegetation such that the total 2.75 acres of extant riparian vegetation will be protected or reestablished by the SRIP Off-Site Mitigation.

As noted above, the final plans for the SRIP Off-Site Mitigation will also protect or replace 0.40 acres of alkali meadow habitat consisting of alkali heath patches. Therefore, after that modification is incorporated into the final

plan, that will reduce the available riparian habitat on the site to 15.89 acres. Finally, because the plan will preserve or replace the full 2.75 acres of existing remnant willow woodland and scrub within the area designated for riparian habitat, that will leave approximately 13.14 acres to be available for mitigation purposes. Since the off-site riparian mitigation required for SRIP is 9.6 acres, there will be up to 3.54 acres more riparian habitat than needed for SRIP mitigation.

The conceptual plan also includes establishing approximately 2.20 acres of native upland vegetation representative of coastal sage scrub habitat on the slopes of the proposed berms above the zone of saturation and potentially on areas that may be disturbed during construction along the San Diego Creek levee and the slope below Campus Drive where the upland species will not be subject to inundation or saturation.

The approximate acreages of riparian woodland and freshwater marsh habitat mitigation that are expected to be required to fulfill the SRIP off-site mitigation are listed below in **Table 1** and compared to the acreages of each habitat type to be established by the proposed SRIP Off-Site Mitigation, excluding the acreage of existing alkali meadow and remnant riparian vegetation on-site that will be preserved or replaced and would not be counted as mitigation.

**TABLE 1
PROPOSED HABITAT MITIGATION AND SRIP OFF-SITE MITIGATION ACREAGES**

Habitat Type	Minimum Required	SRIP Off-Site Mitigation
Riparian Woodland / Riparian Scrub	9.6 ac	13.14 ac
Freshwater Marsh	10.66 ac	12.08 ac
Upland Sage Scrub	n/a	2.20 ac
Total	20.26 ac	27.42 ac

As discussed, and agreed to by and between IRWD, USFWS, and CDFW any extra woody riparian or marsh habitat acreage established at the site that exceeds the minimum off-site mitigation requirements for SRIP may be used by and for IRWD as compensatory mitigation for impacts to similar habitat associated with other future IRWD projects. Such use of surplus habitat acreage as mitigation would be subject to future project permit and mitigation ratios and requirements.

Channels and Berms

The riparian woodland area would involve the creation of three channels that convey water throughout the cell. Within the rest of the riparian cell, the ground surface would be graded to slope and drain to the channels.

The freshwater marsh area would consist of inflow and outflow channels and a central open water area. The open water would promote mixing with fringe vegetated areas and islands. The surrounding marsh area would be graded to slope and drain from the cell perimeter berms to the open water area. A clay layer may be installed at the bottom of the freshwater marsh to decrease permeability, manage moisture, and enhance hydrology for the freshwater marsh and open water habitat.

Berms would be constructed to provide maintenance access and hydraulic separation between the two areas. An additional berm is included to guide flow through the riparian area as shown in Figure 2. Additionally, the

proposed perimeter berm along the UC NRS San Joaquin Marsh property line would replace the existing small berm separating the UC and IRWD parcels. The excavated soil from installation of the channels and open water area would be used to create berms that form individual cells.

Irrigation Infrastructure

During the long-term maintenance phase, the proposed SRIP Off-Site Mitigation would be seasonally irrigated with stormwater that has circulated through the San Joaquin Marsh ponds after being pumped from San Diego Creek. Stormwater and urban runoff is currently circulated through the San Joaquin Marsh via the San Diego Creek intake pump¹ as shown on Figure 3. From the intake pump, stormwater and urban runoff is gravity fed through ponds in a northwestern direction and returned to San Diego Creek via the IRWD San Joaquin Marsh pump and associated pipeline. The Proposed SRIP Off-Site Mitigation's new riparian woodland and freshwater marsh cells would receive water from the existing San Joaquin Marsh pump station, which would be modified by installation of a new control valve to alternate flow between multiple points from the pump station. The existing San Joaquin Marsh pump station has the capacity to serve the proposed SRIP Off-Site Mitigation without alteration.

In response to questions about the potential effect of drawing additional water from San Diego Creek, albeit seasonally, a technical memorandum was prepared to describe the magnitude of the potential effects (ESA, 2022). ESA determined that reducing the San Diego Creek water surface elevation by 0.2 foot due to the proposed diversion and 0.1 foot due to the Peters Canyon diversions, for a total reduction of 0.3 foot due to both diversions, is not expected to significantly affect habitat or vegetation in SDC. During the wet season, these diversions do not operate during storm events and therefore do not effect storm inundation of riparian habitats in San Diego Creek. A reduction of 0.2 to 0.3 ft in water surface elevation is also not expected to significantly affect groundwater levels or soil moisture. Diversions for irrigation of the proposed mitigation, once vegetation is established, are not anticipated to be needed during the dry season from April to October and would therefore not change conditions in the Creek during the dry season months.

Water Supply Pipeline

Irrigation water for the proposed SRIP Off-Site Mitigation would be delivered via a new 12-inch water supply pipeline that would convey water from the existing IRWD San Joaquin Marsh pump station. The water supply pipeline route is identified in the immediate vicinity of the riparian and freshwater marsh cells where it would extend along Campus Drive, with two 10-inch pipeline stubs extending into both the riparian habitat and freshwater marsh habitat areas. IRWD is considering two pipeline route options to convey water from the San Joaquin Marsh pump station to the segment along Campus Drive. The Campus Drive Pipeline Option would connect the San Joaquin Marsh pump station and SRIP Off-Site Mitigation site via Campus Drive to the north and would be approximately 3,335 feet in length. The San Joaquin Marsh Trail Pipeline Option would connect the SRIP Off-Site Mitigation site and the 18-inch San Diego Creek outfall pipe via the southernmost San Joaquin Marsh trail and would be approximately 2,824 feet in length. Both options are discussed further below and shown in Figure 3.

The pipeline would also be constructed to provide a new water supply connection to UC Pond 1, such that the UC NRS marsh could receive water supply directly to the UC Pond system at the highest pond elevation. This

¹ When San Diego Creek flows are between approximately 2 cfs and 18.6 cfs

approach would benefit the UC Marsh by improving the efficiency of distributing water within the marsh via gravity. Water is currently only supplied to the UC NRS marsh via a culvert under Campus Drive located at the lowest point of the marsh. From the connection point where water would enter the Mitigation SRIP Off-Site Mitigation site at the southeastern corner of the SRIP Off-Site Mitigation site, a 10-inch pipeline approximately 1,500-feet long would continue south, turn southwesterly along the toe of the San Diego Creek levee, and extend beyond the southwestern project limit to UC Pond 1 as shown in Figure 3. The pipeline could be installed in the San Diego Creek levee access road instead of along the toe of the levee, which would require coordination with Orange County Public Works. Management of the water supply to the UC NRS will be consistent with the terms set forth in the Agreement Between UC and IRWD Concerning Diversion of Water Pursuant to Riparian Water Right, executed in 2020 (IRWD & UC 2020).

Water supplied via the new pipeline from the IRWD San Joaquin Marsh on the opposite side of Campus Drive could be managed on a flexible schedule to irrigate the SRIP Off-Site Mitigation when water is available (e.g., when flows in San Diego Creek are above 2 cubic feet per second (cfs) and/or when water is not being supplied to the San Joaquin Marsh’s Michelson and Carlson Marshes (ESA Technical Memorandum, April 2022)). The proposed SRIP Off-Site Mitigation would require a total diversion and irrigation amount of approximately 41 to 61 million gallons per year, with less irrigation warranted in wet years and more in dry years. This annual volume is 4.2 to 6.2 acre-feet per acre (ac-ft/ac), which can be thought of as the “depth” of water supplied to the area over a year. Initial irrigation requirements could be higher (initially) as vegetation cover becomes established.

Campus Drive Pipeline Option

The Campus Drive Pipeline Option would connect to the existing 18-inch San Joaquin Marsh pump station outflow pipeline immediately downstream of the pump station. The new water pipeline would then proceed southwesterly toward Campus Drive in the northern San Joaquin Marsh trail as identified in Figure 3. The pipeline would cross underneath Campus Drive at an existing culvert and then turn south toward San Diego Creek to connect with the main line.

San Joaquin Marsh Trail Pipeline Option

The San Joaquin Marsh Trail Pipeline Option would connect to the existing 18-inch San Joaquin Marsh pump station outflow pipeline at the southernmost end just upstream of the San Diego Creek outflow point. This option connects upstream of the existing pressure reducing valve, which would be reconfigured to upsize the intersection and include a tee to the new pipeline, that would then proceed south to the existing San Joaquin Marsh trail. The San Joaquin Marsh Trail Pipeline Option would continue southwesterly in the trail toward Campus Drive before following the trail to the west and crossing underneath Campus Drive, where it would connect to the riparian and freshwater marsh cells.

Appurtenant Facilities

Water would be conveyed into and out of the riparian woodland via two flow control structures. In each of the inflow/outflow structures, three flashboard risers would be installed to split flow through the three riparian channels.

A culvert with headwalls and rock riprap outflow scour protection would be located through the access berm to convey water from the riparian cell to the freshwater marsh cell. A similar culvert structure with an added

flashboard riser would be located in the northwest corner of the freshwater marsh cell to facilitate drainage/maintenance of the cell as needed, with outflow to the UC Seasonal Marsh.

Temporary Irrigation System

During the initial establishment of vegetation, a temporary irrigation system would be installed with an automated, above-ground irrigation network for the riparian and upland (buffer) areas. An overhead spray system with sprinkler heads on risers may be preferred, although drip emitters (e.g., for upland sage scrub container plant groupings) could also be used. It is intended that temporary irrigation be used judiciously as a potential supplement to rainfall and naturally occurring soil moisture. Temporary irrigation would likely be phased out and discontinued several years before the end of an establishment period to help confirm the habitats are established and self-sustaining. Once temporary irrigation use is phased out, the system components could be removed from the site.

Habitat

Three dominant habitat types are planned to be established including freshwater marsh, woody riparian, and upland scrub as indicated on Figure 3. Woody riparian vegetation, dominated by native willow trees and mule fat (*Baccharis salicifolia*), will occupy the southeast part of the site where the ground is planned to be saturated by flood irrigation for part of the growing season and where the mean grade would be within approximately 6 feet of groundwater. The woody riparian plant palette includes a variety of native understory species along with dominant shrub and tree species to establish stratified canopy layers. The freshwater marsh habitat will occupy the northwest part of the site and will include areas of open water in relatively deep channels with marsh vegetation to be established in shallow areas and margins around the open water. Marsh habitat will consist predominantly of bulrushes (e.g., *Schoenoplectus* and *Bolboschoenus* ssp.) and other appropriate native herbaceous hydrophytes. The upland sage scrub vegetation will be seeded and planted along exterior berm slopes and on the upper parts of interior berm slopes adjacent to and above riparian planting areas. It is expected in the interface of these habitats there will be ecological and habitat ecotone transition areas with a mixture of planted / seeded and volunteer species. In addition, final plans will integrate patch areas where alkali heath displaced by construction would be replaced. Soil amendments may be needed to improve the rate of revegetation establishment. The anticipated planting/habitat establishment period is three to five years.

Methods

Literature Review

ESA conducted a review of recent biological studies of the site and adjacent areas along with other pertinent literature, topographic (LiDAR) mapping, and recent and historic aerial photography. Prior to field studies, ESA performed a desktop review of databases including the National Wetlands Inventory, the California Natural Diversity Database (CNDDDB), and the California Native Plant Society Online Inventory of Rare and Endangered Plants. Other data sources reviewed included the United States Department of Agriculture Natural Resources Conservation Service (NRCS) soils mapping (USDA 2021), and critical habitat maps (USFWS 2021a).

Field Survey

During initial studies of potential areas for habitat mitigation in October 2021, an ESA biologist surveyed the SRIP Off-Site Mitigation site to identify, characterize, and map vegetation types. Additional site visits late in 2021 involved collecting soil samples for analysis to determine suitability for habitat mitigation, and in August of 2022 to install ground water monitoring well tubes. In May 2023, ESA senior biologists revisited the site to confirm vegetation mapping and to evaluate the potential for special status plant or wildlife species to occur at the SRIP Off-Site Mitigation site based on current conditions.

The survey efforts in October 2021 and May 2023 involved pedestrian access over the entire site. Plant and animal species observed or detected were noted during the site visits. The database search results, literature review, and survey results identifying biological resources provide sufficient information to evaluate the potential presence and possible effects on regulated and/or significant biological resources as the result of implementing the SRIP Off-Site Mitigation. These results provide the basis for recommending measures to avoid, minimize, or mitigate potential effects, if needed.

Regulatory Framework

For the purpose of this report, potential impacts to biological resources were also evaluated with reference to and in consideration of the following regulations, policies and statutes, as applicable:

- California Environmental Quality Act (CEQA)
- Orange County Central-Coastal Natural Communities Conservation Plan / Habitat Conservation Plan (NCCP/HCP)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

Results

General Site Description

The SRIP Off-Site Mitigation site covers a roughly rectangular area that amounts to approximately 33.4 acres. Almost the entire site is very flat but slightly tilted downward from the San Diego Creek levee to the northeast. Topographic mapping indicates a difference of only about four feet between the southeast and northwest elevations of the flat part of the site. There is a low berm separating the site from the experimental ponds in the UC San Joaquin Marsh Reserve adjacent to the southwest side of the site, but there is no berm on the northwest side so the SRIP Off-Site Mitigation site and the UC Reserve are fully connected along that boundary. In extremely wet years, such as 2023, the lowest part of the SRIP Off-Site Mitigation site in the extreme northwest corner was briefly inundated. However, in most years, the flat parts of the site are completely dry. Along Campus

Drive, the edge of the SRIP Off-Site Mitigation site is represented by a steep slope that rises from the flat area to a chain link fence along the road right-of-way. Campus Drive inclines gradually upward from northeast to southeast, from an elevation of about 6 feet above the northeast corner of the SRIP Off-Site Mitigation site, toward the San Diego Creek Bridge where it is elevated at least 16 feet above the flat part of the site. Likewise, the SRIP Off-Site Mitigation site slopes up to a barb-wire fence along the San Diego Creek levee along the southwest edge of the site which is elevated about 16 feet higher than the flat part of the site. San Diego Creek flows to the southwest about 1.3 miles from the Campus Drive Bridge until it flows into Upper Newport Bay.

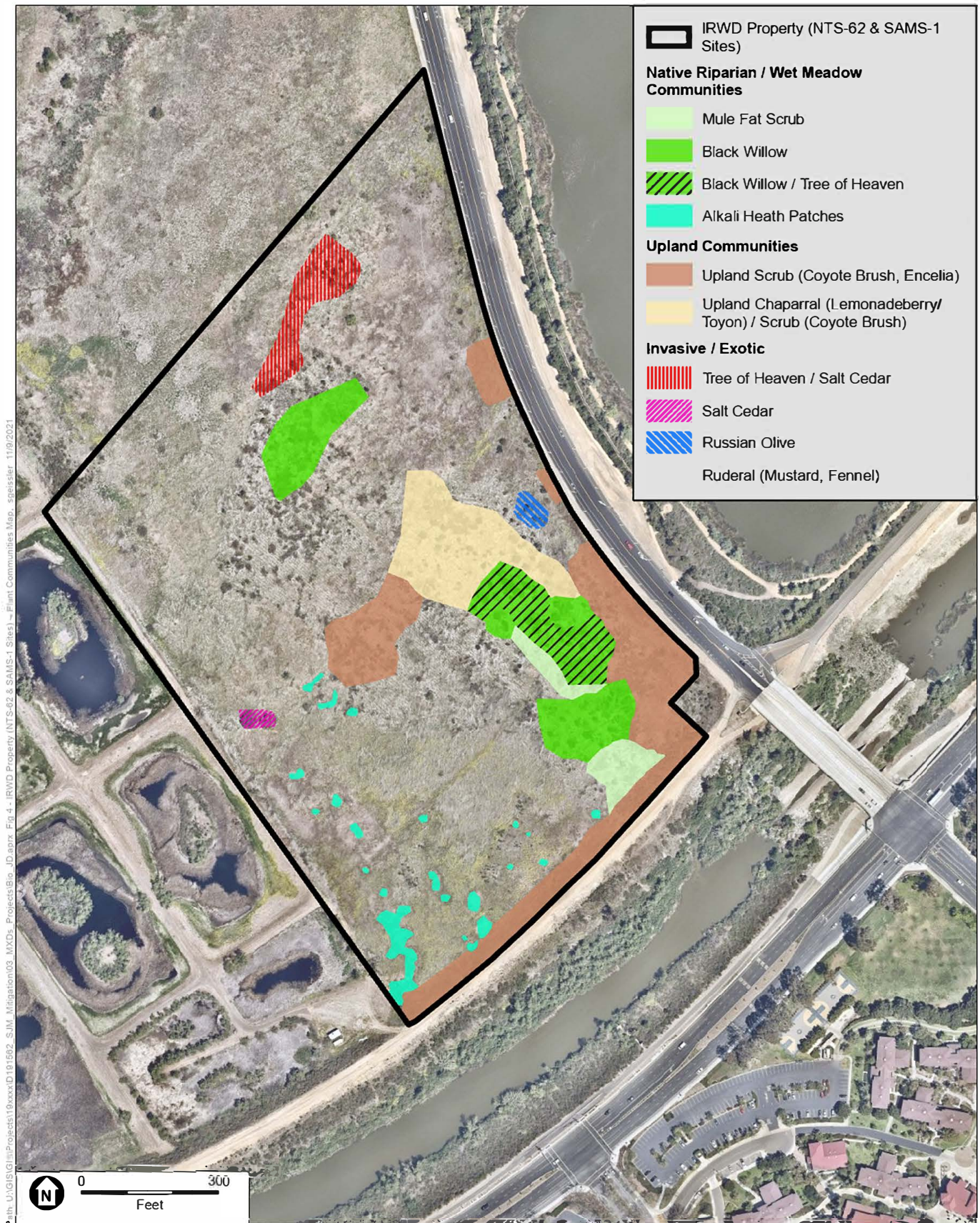
As depicted on **Figure 4 – Plant Communities**, the site supports some remnant native riparian vegetation that was originally planted in the mitigation site, along with patches of native scrub and chaparral shrubs mixed with co-dominant ruderal (weedy) vegetation. The majority of the site (i.e., > 24 acres) is dominated by non-native forbs and herbaceous species. Vegetation types are described below in Section 4-C (Vegetation Types and Land Cover).

Soils

The Natural Resources Conservation Service map of the area indicates Omni clay as the only soil type over the entire site (USDA May 2023). Omni clay soils are typically poorly drained, have slow to very slow runoff and slow permeability. The primary uses of this soil type are for irrigated row and field crops. Soil samples taken from the southeast and southwest quadrants of the site were analyzed at Waypoint Analytical laboratory in Anaheim in December 2021. Analyses indicated high clay content, with the composite sample from the southwest quadrant characterized as clay (44.6% clay, 30.4% silt, 21% fine sand, remainder coarse sand or gravel) and the sample from the southeast quadrant identified as sandy clay loam (26.2% clay, 20.5% silt, 51.6% fine sand, remainder coarse sand or gravel). Therefore, the surface material appears to be roughly similar to the mapped soil series but is likely to have been disturbed, possibly by the historic addition of fill material and also possibly by historic cultivation. In August 2022, a series of five ground water monitoring wells were installed to a minimum depth of 15 feet below mean grade to identify and measure ground water depths. Well tubes were placed in a rough “X” pattern over the site with a well tube placed at the ends of both bars of the “X” near each corner of the site and one where the bars cross near the center of the site. Inspection of the cores that were brought up by the drill rig revealed that that a dense clay layer of unknown thickness is present under the site. The dense clay was encountered at 10 to 11 feet deep in the southeast and southwest corners of the site and found to occur at depths of approximately 12 to 15 feet in the center and near the northeast and northwest corners of the site. It may be speculated that the clay layer represents the level of a historic marsh that existed prior to human development in the area and that the area may have been filled to promote agriculture at around the time San Diego Creek was channelized.

Vegetation Types and Land Cover

The natural communities and land use types that were observed on the SRIP Off-Site Mitigation site were mapped in the field and generally characterized according to the dominant species in each habitat. The majority of the 33.4-acre property exhibits a relatively dense herbaceous cover or herbaceous understory comprised mainly of two mustard species, black mustard (*Brassica nigra*) and short-podded mustard (*Hirschfeldia incana*) along with poison hemlock (*Conium maculatum*) and fennel (*Foeniculum vulgare*) which are common to co-dominant in some areas.



SOURCE: NearMap, 2021; ESA, 2021

SRIP Off-Site Mitigation

Figure 4
Plant Communities Map



The west side of the property also exhibits the same prevalence of ruderal mustard and fennel. Small patches of alkali heath (*Frankenia salina*) also occur in the southwestern area of the site. It is speculated that these patches may be sustained by lateral seepage of water from the experimental ponds on the UC property to the west, but that has not been confirmed.

The northeastern corner, as well the central and southeastern part of the parcel, exhibit patches with a mix of both upland shrubs and remnant riparian shrubs and live willow trees. Ruderal vegetation and a scattering of coyote brush shrubs continue to replace the old grove of dead willow trees. Although some snags (erect tree trunks) remain, most of the willow trees have died and fallen logs are abundant in the former willow grove area.

Patches of remnant native riparian elements include areas dominated by black willow (*Salix gooddingii*) and mule fat (*Baccharis salicifolia*). Tree of heaven (*Ailanthus altissima*) is also present commonly and is co-dominant with willow in one large patch. Coyote brush (*Baccharis pilularis*) is scattered frequently throughout much of the east side of the property and is common to co-dominant in patches of moderately dense upland shrub vegetation in the south central and southeast corner. Several patch areas of upland vegetation are dominated by large perennial shrubs that are usually found in mixed chaparral and coastal scrub habitats, including lemonade berry (*Rhus integrifolia*), laurel sumac (*Malosoma laurina*), and toyon (*Heteromeles arbutifolia*). Other patch areas are dominated primarily by coyote brush with mule fat also present in some areas and California encelia (*Encelia californica*) common on the slope along Campus Drive. The woody shrubs exhibit from 25% to 45% cover in the areas mapped as scrub or chaparral/scrub, and in some patches as much as 65% cover on the north side of the San Diego Creek levee and along the slope adjacent to Campus Drive. However, the understory of mustard and fennel is also prevalent on all these patch areas.

The few remaining black willow trees may have some relatively deep roots, as no groundwater or soil saturation was observed within the upper 20 inches of soil in the vicinity of these trees in 2021. The willows were originally established with artificial irrigation and old piping still remains on the site from that installation. Examination of a succession of aerial photographs of the area since the 2000's and the presence of many dead snags, shows that the willow grove area is much smaller than the original grove and the remnant willow trees are still struggling. In 2021 and 2023, the remnant willows exhibited drought stress while the adjacent upland vegetation did not exhibit stress symptoms.

Removal and control of invasive exotic tree and shrub species, including tree of heaven, tamarisk (*Tamarix ramosissima*), Russian olive (*Eleagnus angustifolia*) and any Mexican fan palm (*Washingtonia filifera*) specimens, is also highly desirable to prevent further spreading and establishment of these plants. If these invasive exotic specimens are not removed, they pose an ever-increasing threat to invade the UC Reserve property and also spread to other habitats in San Diego Creek and the San Joaquin Marsh on IRWD property north of Campus Drive.

The location and configuration of various types of vegetation are presented on Figure 4 – Plant Communities.

Riparian Plant Communities

The “riparian” communities noted below, are somewhat misleadingly named as the “riparian” label typically represents vegetation that is characteristic of seasonally wet areas or that is directly associated with stream or lakeside margin areas. In this case, however, there is no flowing surface water and no ponded areas present to support the hydrophytic (water-dependent) plant species that are common to dominant in the patch areas

described below. The lack of surface water is directly correlated with the poor to very poor condition of these vegetation types on the SRIP Off-Site Mitigation site. Nevertheless, these patches of riparian vegetation contain native plant elements and constituents and offer some value to wildlife that require consideration. The remnant woody riparian vegetation (i.e., willow and mule fat patches), comprise approximately 2.73 acres of the property. The native herbaceous patches of alkali meadow habitat (i.e., alkali heath patches) adds another 0.39 acre, for a total of 3.13 acres that exhibits some dominance by native riparian or seasonally wet meadow habitat constituents.

Black Willow

Willow scrub dominated by black willow is a form of riparian habitat, which is typically characterized by a moderately dense habitat dominated by small trees or shrubs. Natural riparian communities are generally associated with rivers, streams and their tributaries where water is present for sufficient time to support woody hydrophytic (water-dependent, or water “loving”) vegetation. The black willow dominated habitat on-site is a remnant from the failed SAMS-1 riparian restoration effort from the 1990’s. Abandoned irrigation piping indicates that the black willows were originally established with artificial irrigation but that was discontinued long ago. Patches containing black willows occur in both the north and southeast parts of the site that cover approximately 1.45 acres. One other patch is mapped with tree of heaven (*Ailanthus altissima*) as a co-dominant with willows, along with herbaceous non-natives in the understory, that amounts to approximately 0.81 acre. The total area of willow scrub and mixed willows with tree of heaven occupies 2.25 acres.

Mule Fat Scrub

Small areas where willows are lacking but where mule fat is dominated are mapped as mule fat scrub. These amount to approximately 0.48 acre on-site in the southeast part of the SRIP Off-Site Mitigation site. Mule fat scrub is a short-statured riparian scrub community. These patches also contain a significant amount of coyote brush, which tends to favor upland areas.

Alkali Heath Patches

Scattered patches of alkali heath (*Frankenia salina*) were mapped primarily in the southwest portion of the site. In the aggregate, these small patches cover a total of approximately 0.39-acre on the SRIP Off-Site Mitigation site. Alkali heath is typically associated with seasonally moist areas that have an elevated salt content. These alkali heath patches may be supported by seepage from the UC ponds located to the southwest, but that has not been confirmed.

Exotic Invasive Trees

Invasive species such as tree of heaven and salt cedar occur in patch areas in the northern and western parts of the site, and a single patch of non-native Russian olive is present near Campus Drive in the middle section of the property. These elements are detrimental to habitat quality and provide little value to wildlife. Unchecked, these plant species, particularly the tree of heaven and salt cedar will spread over a relatively short time and become more dominant over a larger area. Collectively, these patches cover approximately 0.79-acre. The single mixed patch of salt cedar and tree of heaven near the north end of the property occupies about 0.62 acre.

Upland Plant Communities

Upland or dry land plant communities on the SRIP Off-Site Mitigation site include large areas dominated by ruderal (weedy vegetation consisting almost entirely of non-native herbaceous species, as well as some more

limited areas that exhibit a mix of native shrubs and non-native herbaceous plants. The predominantly ruderal upland habitat covers approximately 24.89 acres, which is almost three quarters of the SRIP Off-Site Mitigation site. The mixed upland habitat types cover a total of approximately 4.64 acres, and occur on the slope along Campus Drive, along the levee slope, and in two patch areas in the central part of the site.

Mixed Native Upland, Chaparral / Scrub

Shrub species that are found in coastal sage scrub are generally short (< 2m tall), drought deciduous, soft-leaved. On the SRIP Off-Site Mitigation site, a few sage scrub species are present including California encelia, California sagebrush (*Artemisia californica*), and coyote brush, generally mixed with or sub-dominant with ruderal mustard and other non-native annual grasses and forbs. Coyote brush shrubs are scattered over much of the property, but these shrubs are common to dominant in open patches in the south central and southeast corner of the site. Encelia is most common on the slopes adjacent to Campus Drive and on the levee slope. The upland scrub vegetation accounts for approximately 2.23 acres on the property, primarily on the eastern and southeastern slopes. Taller (>2m), sclerophyllous (waxy-leaved), evergreen shrubs are usually considered to be representative of typical chaparral vegetation. On the SRIP Off-Site Mitigation site representative chaparral species include lemonadeberry, laurel sumac, and toyon. These larger shrub species occur as co-dominant elements in one patch covering approximately 1.41 acres in the central part of the site along with a mix of the shorter scrub shrub species along with a substantial ruderal component.

Ruderal

Roughly three quarters of the site, approximately 24.89 acres, is dominated by ruderal vegetation. Non-native plants that commonly occur on the SRIP Off-Site Mitigation site include mustard species, poison hemlock and fennel. This vegetation type provides low habitat value to most wildlife.

Wildlife Observations

A number of common amphibians and reptiles that have been noted in the San Joaquin Marsh, such as western toad (*Bufo boreas*), Pacific treefrog (*Pseudacris regilla*), side-blotched lizard (*Uta stansburiana*), and San Diego gopher snake (*Pituophis melanoleucus*), are expected to occur on the SRIP Off-Site Mitigation site, at least occasionally. Although none of these species were encountered during the surveys performed by ESA, these and other common species are known to occur in the adjacent property and would be expected to be noted during more intensive surveys. Likewise, a few small mammal species, including deer mouse (*Peromyscus californicus*), California vole (*Microtus californicus*), non-native opossum (*Didelphis marsupialis*), California ground squirrel (*Spermophilus beecheyi*), and cottontail rabbit (*Sylvilagus audubonii*) may also be present on site, but were not specifically identified during the vegetation mapping and other site surveys.

Although most of vegetative cover on the SRIP Off-Site Mitigation site is ruderal, the native scrub and chaparral shrubs and remnant willows and mule fat vegetation still provide foraging and potential nesting opportunities for some birds. Even the ruderal vegetation is used by some species, mostly by insectivorous foraging species. Common avian species observed included the following: turkey vulture (*Cathartes aura*), common yellowthroat (*Geothlypis trichas*), house finch (*Haemorhous mexicanus*), American crow (*Corvus brachyrhynchos*), Bewick's wren (*Thryomanes bewickii*), song sparrow (*Melospiza melodia*) and California towhee (*Melospiza crissalis*). The SRIP Off-Site Mitigation site is directly adjacent to the larger and more complex riparian habitat and wetland system that comprises the rest of the San Joaquin Marsh, both in the UC Marsh Reserve and across Campus Drive in the extensive wetland and riparian habitat on the IRWD property. There are many local resident and migratory

species that may visit the site occasionally and a few others that may nest in the remnant native and ruderal vegetation therein. Some accounts indicate that as many as 200 or more avian species have been reported in that larger area. However, the habitat on the SRIP Off-Site Mitigation site contains no wetlands or open water habitat and the native vegetation on-site is relatively limited as compared with the non-native components, which means the SRIP Off-Site Mitigation site does not provide breeding or even foraging habitat for more than a fraction of the species that are expected to stop over and utilize the extensive riparian and wetlands elsewhere in the larger San Joaquin Marsh. For example, the absence of any standing water or regular inundation means that wading birds, ducks, loons, and many other avian species that reside in or visit the ponds and extensive woody riparian habitats in the San Joaquin Marsh (both the UC and IRWD sides) are unlikely to occur on the SRIP Off-Site Mitigation site for any length of time. Nevertheless, several individual birds that are designated as special status species have been observed or may occur on the subject property, as described below.

Special Status Natural Communities

Sensitive natural communities are designated as such because they are considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution and may be considered threatened enough to warrant some level of protection. Sensitive natural communities include those that are identified by CDFW in the California Natural Community List (CDFW 2023). The CDFW state rank refers to the perceived rarity and potential threat level for vegetation types in the state as described below, with S1 through S3 ranks considered to be “sensitive” natural communities by CDFW.

S1 = Critically Imperiled – At very high risk of extirpation due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2 = Imperiled – At high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3 = Vulnerable – At moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 = Apparently Secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 = Secure - At very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

Two sensitive natural communities occur within the subject property that are ranked S3 by CDFW: black willow thicket, which includes the black willow/mule fat scrub alliance (61.211.01 *Salix gooddingii*; 61.211.02 *Salix gooddingii* / *Baccharis salicifolia*), and alkali heath patches (52.500.02 *Frankenia salina*).

In addition, in Southern California, coastal sage scrub (CSS) plant communities are generally considered sensitive due to historic losses and because many wildlife and plant species are closely associated with types of CSS. On the subject property, the mixed scrub vegetation on the slopes along Campus Drive and the San Diego Creek levee, despite containing substantial non-native herbaceous cover, is still considered CSS and is understood to constitute a sensitive plant community. The OC Central-Coastal NCCP/HCP addresses this plant community comprehensively and provides guidance regarding how various impacts to this community must be addressed

within the NCCP/HCP plan area. The SRIP Off-Site Mitigation site lies with an area of the NCCP/HCP that is designated as “Non-Reserve Open Space” and as such is subject to NCCP/HCP requirements.

Aquatic Resources

The SRIP Off-Site Mitigation site is not normally wet or saturated near the surface and contains no ponded water. Five groundwater monitoring wells or “tubes” were installed in an “X” pattern across the site, each to a depth of approximately 15 feet below the surface grade. The wells were monitored monthly from August 2022 through the summer of 2023, which includes one of the wettest water years in recent history. Data collected from the wells showed that groundwater levels were always several feet or more below the surface except at the northwest corner where that part of the site was very wet in the spring of 2023. Aerial photography also indicated the unusually wet condition was restricted to the northwest corner of the site in the spring of 2023, while a review of aerials for more than 10 years prior showed no such inundation in that area. This leads to the conclusion that wet conditions in the northwest corner of the site are very unusual. Although it is the lowest part of the subject property, it is only subject to inundation during extremely wet water years but remains dry in most years.

Also, the site lacks a hydrologic connection to San Diego Creek or any other stream or surface waters. The southwest part of the site may receive subsurface lateral seepage from the UC experimental ponds which could explain the presence of alkali heath patches within a matrix of ruderal upland vegetation where the groundwater does not occur close to the surface as noted previously. The alkali heath (or “sea heath” plant species is rated as a Facultative Wetland (FACW) plant in the Arid West and Western Mountains, Valleys, and Coast regions by the National Wetland Plant List (USACE, 2022). The FACW rating is applied to plants that “usually occur in wetlands but may occur in non-wetlands”, so it may be that the plants that occur on the site are simply adapted to the non-wetland conditions that prevail in the area. For comparison, the remnant riparian vegetation has been dying off for at least 15 years and that trend is expected to continue with upland and ruderal vegetation continuing to displace the remnant stand of willows. The SRIP Off-Site Mitigation site lacks any features that could be considered to meet the current definition of “Waters of the U.S.”, and likewise, the property exhibits no bed or bank features, and thus would not be regulated by CDFW under Section 1600 of the Fish and Game Code.

Special-Status Plant Species

Special-status plants include those listed, or candidates for listing, by the USFWS and CDFW, and species considered special-status and designated with particular ranks by CDFW in coordination with the California Native Plant Society (CNPS). No special status plant species have been observed on the SRIP Off-Site Mitigation site, but several are reported to occur in the general vicinity, based on a CNDDDB search. Therefore, six special-status species were evaluated for their potential to occur as they have historic records within a one to two-mile radius of the SRIP Off-Site Mitigation site. These species include: Coulter's saltbush (*Atriplex coulteri*), Davidson's saltscale (*Atriplex serenana* var. *davidsonii*) southern tarplant (*Centromadia parryi* ssp. *australis*), many-stemmed dudleya (*Dudleya multicaulis*) and Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*). Appendix A (Special Status Plants – Potential to Occur) attached to this memorandum, presents details pertaining to these plant species, their associated habitat preferences and blooming periods, and summary discussions of the potential for each to occur.

None of the six species considered are expected to occur on-site due to a lack of suitable habitat and because the property has been subject to considerable historic disturbance. The subject property is mostly dominated by non-

native mustard, poison hemlock and non-native perennial shrubs such as tree of heaven which would tend to exclude any rare plant species from occurring. Also, the slopes along the San Diego Creek levee and Campus Drive were originally artificially constructed, and thus have never supported an entirely natural community. Finally, the central and east side of the site was previously cleared and planted with a grove of willow trees and irrigated for several years before being abandoned. In areas outside the abandoned willow grove (i.e., outside the SAMS-1 site), the area is too densely vegetated by exotic mustard and poison hemlock for any of the special status plants considered to occur.

Special Status Wildlife Species

Special-status wildlife include those species listed or designated as candidates for listing as Endangered or Threatened under either the FESA and/or CESA, as well as animals that are designated by CDFW as “Species of Special Concern.” Eight special-status wildlife species were evaluated regarding their potential to occur on the SRIP Off-Site Mitigation site (please see Appendix B – Special-Status Wildlife Potential to Occur). Based on habitat requirements and life histories, it was determined that three of the eight wildlife species considered, including grasshopper sparrow (*Ammodramus savannarum*), light-footed Ridgway’s rail (*Rallus obsoletus levipes*), and western mastiff bat (*Eumops perotis californicus*), are not expected to occur on the SRIP Off-Site Mitigation site, although western mastiff bat could occasionally forage over the area as this species ranges widely during nocturnal foraging. Three of the species have been observed on the subject property, including white-tailed kite (*Elanus leucurus*) which is a Fully Protected species in California (CFP), coastal California gnatcatcher (*Polioptila californica californica*), which is federally listed as Threatened under FESA and a CSC), and least Bell’s vireo (*Vireo belli pusillus*) which is listed as Endangered under both FESA and CESA. The two other special-status wildlife species considered have a low potential to occur on the SRIP Off-Site Mitigation site. These are southwestern pond turtle (*Actinemys pallida*), just recently proposed for listing as federally threatened by the USFWS, and yellow-breasted chat (*Icteria virens*) a California Species of Special Concern. More detailed information is provided in the individual accounts for those species considered that area State or federally listed, or proposed for listing, or fully protected species in California.

One other listed species, light-footed Ridgway’s rail, and one reptile species very recently proposed for listing, southwestern pond turtle (*Actinemys pallida*), have been observed or reported to occur at the UC Marsh Reserve. Although not observed during the May 2023 site visit or during informal other informal visits since 202, a pair of white-tailed kites have been observed foraging over the area.

Southwestern Pond Turtle

Western pond turtles are small to medium-sized turtles and appear drab dark brown to olive brown or blackish. They are diurnal (day-time active) and may be active almost year-round with the length of the active season depending on the local climate. Pond turtles are usually observed when basking on shore or on a rock or log above the water, but they will quickly slide into the water if threatened. The southwestern pond turtle (*Actinemys pallida*) occurs in southern California from Monterey County south to Los Angeles, Riverside and San Diego counties into northern Baja California, Mexico. These turtles use rivers, lakes, ponds, streams, other water sources and terrestrial habitats throughout their lives.

On September 29, 2023, U.S. Fish and Wildlife Service announced a proposal to list both species of western pond turtle, the northwestern pond turtle (*Actinemys marmorata*) and the southwestern pond turtle, as a threatened species under the Endangered Species Act. The Service is also proposing a 4(d) rule that allows activities that

support conservation of both species, including wildfire suppression and management, maintenance of existing livestock ponds, habitat restoration, and non-native species removal. The 4(d) rule would allow land managers and others to carry out these activities without the risk of violating the Endangered Species Act on their properties because they are expected to have beneficial or negligible impacts to pond turtles and their habitat (USFWS 2023).

ESA biologists directly observed individual pond turtles basking on logs and on shore of ponded areas situated approximately 1,500 feet northwest of the subject property limits in the UC Marsh Reserve. If other turtles inhabit ponded areas on the UC property that are closer to the SRIP Off-Site Mitigation site, individual turtles could enter the subject property or potentially use the site occasionally during winter months. The lack of any standing water on-site reduces the likelihood of this species presence on site. However, it cannot be ruled out since the species is not entirely restricted to aquatic areas and is mobile enough to range away from water onto the SRIP Off-Site Mitigation site.

Light-footed Ridgway's Rail

The light-footed Ridgway's rail, formerly light-footed clapper rail, is a secretive marsh bird found primarily in coastal salt marshes, but also occurs in brackish and freshwater cattail or bulrush marshes in Southern California. According to USFWS, the largest subpopulation of these rails is found in the Upper Newport Bay, near the SRIP Off-Site Mitigation site. This species is listed as both State and federally Endangered and is also designated as a California Fully-Protected species.

This species has been reported to occur occasionally in recent years at the UC San Joaquin Freshwater Marsh Reserve, in tule marsh habitat. However, the SRIP Off-Site Mitigation site does not support any suitable tule marsh habitat and rails rarely leave the protection of the dense vegetation except to forage in good quality habitat. Therefore, this species is not expected to occur on the subject property due to the lack of sufficient cover and lack of suitable marsh vegetation.

White-tailed Kite

White-tailed kite is a year-round non-migratory resident of Southern California. This species prefers grasslands, meadows, or marshes for foraging next to woodlands with dense-topped trees for nesting and perching. White-tailed kites feed primarily on California voles (*Microtus californicus*). This bird is a Fully Protected species in California (CFP) and is also an Identified Species under the OC Central-Coastal NCCP/HCP, which means that limited effects on the species are covered for those projects that are implemented consistent with the NCCP/HCP plans and provisions.

The lack of trees with dense upper canopy foliage indicates that the SRIP Off-Site Mitigation site lacks suitable nesting habitat for this species. This species is known to forage over the subject property and a pair of white-tailed kite was observed flying or hovering over the subject property as recently as 2021.

Least Bell's Vireo

The least Bell's vireo is a small migratory songbird that winters in southern Baja, Mexico. It migrates north to spend the spring and summer in riparian woodlands and riparian scrub habitat consisting of cottonwood-willow forest, shrubby thickets, and dry washes with willow thickets at the edges.

The least Bell's vireo is listed as a State and federally Endangered species and is identified as a Conditionally Covered species under the NCCP/HCP. A range-wide decline of least Bell's vireo was attributed to extensive habitat loss and degradation as well as poor breeding success due to brood parasitism by brown-headed cowbirds (*Molothrus ater*). Population decline led to the species' federal listing as Endangered on May 2, 1986 (51 FR 16474). Critical habitat for the species was designated in 1994. The State of California had earlier listed this small songbird as Endangered on June 27, 1980.

The remnant woody riparian vegetation leftover from the failed mitigation attempt in the 1990's still provides some limited habitat for this species in the central and southeastern parts of the SRIP Off-Site Mitigation site. One individual was heard calling and moving around in mule fat and other vegetation in the southeast end of the site in May 2023. The riparian woodland and scrub in the adjacent segment of San Diego Creek provides superior habitat for this species, but that reach of the Creek appears to be at or near carrying capacity for least Bell's vireo nests, which are known to occur at regular intervals along the Creek annually. It is unknown whether the bird noted on-site was nesting, defending territory, or merely foraging. In any case, the potential for this species to use the site is confirmed and the possibility that it could nest on the subject property cannot be ruled out.

Coastal California Gnatcatcher

The coastal California gnatcatcher is a year-round resident in Southern California and is strongly associated with coastal sage scrub (CSS) habitat in its various successional stages. The breeding season extends from mid-February through August, with most nesting activity occurring from mid-March through June. This tiny songbird is designated as a Species of Special Concern in California and was federally listed as threatened on March 30, 1993 (58 FR 16742). As a Covered species under the O.C. Central-Coastal NCCP/HCP, take of this species may be allowed through participation in the NCCP/HCP and compliance with all relevant provisions.

The upland scrub vegetation that occurs on the east and south side of the SRIP Off-Site Mitigation site along the edge of Campus Drive and the San Diego Creek levee slope provides at least marginally suitable habitat for this species. The habitat is less than optimal, however, because it exhibits relatively low shrub diversity and is frequently dominated by non-native ruderal vegetation. It is also not well connected to other patches of CSS in the local area. Nevertheless, although habitat quality is considered rather marginal, this species was detected during the 2021 survey and again during an informal visit in 2023, both time in the southeast corner of the subject property, on the slope below Campus Drive and the San Diego Creek levee.

Wildlife Movement

For a great many species of wildlife, movement over the landscape is essential for foraging, breeding and genetic exchange, dispersal of young, and for other purposes important to survival of both individuals and populations. Wildlife movement corridors or habitat linkages are linear habitat features that connect blocks of habitat that would otherwise be disconnected. Functional wildlife movement corridors are especially important within highly fragmented habitat where urban development, infrastructure, or agricultural land uses separate and obstruct access to natural areas. The term "wildlife movement corridor" usually refers to routes used by terrestrial animals, but the term may also be used in reference to aquatic or avian species, and even encompasses the ability of plants to exchange genetic material by various means involving movement of wildlife which may carry and distribute genetic material. On a regional scale, movement corridors can also include avian flyways, mountain ranges, or major river systems. On a more local scale, landscape linkages may include almost any overland or stream

connection where open space strips, greenbelts, creeks, parks and wildlife preserves contribute to a network of interconnections between and among large patches of wildlife habitat.

The study area is within the City of Irvine and the SRIP Off-Site Mitigation site is generally surrounded by open space including the San Joaquin Marsh area within the UC Natural Reserve System property, the IRWD San Joaquin Marsh north of Campus Drive, and San Diego Creek. The SRIP Off-Site Mitigation site is not identified as a Missing Linkage in the South Coast Missing Linkages report (South Coast Wildlands 2008). However, inspection of aerial photographs of the region show that San Diego Creek, which borders the southern portion of the study area provides a narrow linkage between San Joaquin Marsh and Upper Newport Bay to the west. San Diego Creek itself is therefore considered a potential wildlife movement corridor. Also, in a general sense, the entire San Joaquin Marsh is a small, but relatively important habitat patch for migrating birds that use the Pacific Flyway. The SRIP Off-Site Mitigation site contributes somewhat lesser value per acre than other parts of the marsh for birds that may briefly stopover in migration, as it contains no open water areas and is mostly dominated by lower quality ruderal vegetation

SRIP Off-Site Mitigation Effects

This section describes the potential effects of the SRIP Off-Site Mitigation on biological resources associated with the SRIP Off-Site Mitigation site. A project is generally considered to have a significant effect if it proposes or results in any of the conditions described in the significance thresholds presented below (in *italics*), absent specific evidence to the contrary. Conversely, if a project does not propose or result in any of the following conditions, it would generally not be considered to have a significant effect on biological resources, absent specific evidence of such an effect. These significance thresholds are taken from Appendix G of the 2023 CEQA Guidelines.

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

Special-Status Plants

No special-status plants are known or expected to be present within the maximum work area limits of the SRIP Off-Site Mitigation. A total of six special-status plants have been historically recorded in the region and several occurrences are documented nearby. However, none of the six species are expected to occur on-site due to a lack of suitable habitat and due to the historic disturbance on the subject property. The area within the work area limits is primarily ruderal (weedy) vegetation or was previously planted with willow trees and irrigated for several years before being abandoned. In areas outside the abandoned willow grove the area is too densely vegetated by exotic mustard and poison hemlock for any of the special status plants considered to occur.

Therefore, **no impact** related to a substantial adverse effect on any plant species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations by CDFW or USFWS would be anticipated to occur as a result of the SRIP Off-Site Mitigation. No mitigation for special status plants is needed.

Special-Status Wildlife

The SRIP Off-Site Mitigation site does not occur in or near any designated Critical Habitat for any federally-listed species. Also, most of the SRIP Off-Site Mitigation is occupied by ruderal habitat that provides relatively low value to wildlife, including special status species. As previously noted, the objectives of the SRIP Off-Site Mitigation are to establish more than 16 acres of woody riparian vegetation along with more than 12 acres of tule marsh wetlands and open water habitat. The SRIP Off-Site Mitigation will also establish up to 2.2 acres of new CSS vegetation along the completed berm slopes within the property and will preserve and could potentially include enhancement of existing CSS on the slopes adjacent to Campus Dr. and the levee. Approximately 2.75 acres consisting of remnant willows (1.45 ac.), mixed black willow / tree of heaven patches (0.81 ac.) and mule fat scrub (0.49 ac.) occur within the SRIP Off-Site Mitigation area. The remnant riparian communities are in relatively poor condition due to progressive displacement by exotic plants and poor natural hydrology and will continue to deteriorate if left alone. Nevertheless, most of the existing riparian scrub habitat, which provides at least marginally suitable habitat for the special status least Bell's vireo and yellow-breasted chat, and at least half of the existing CSS habitat that provides potentially suitable habitat for coastal California gnatcatcher, may be removed as the result of clearing and grading to create the new habitat areas. The SRIP Off-Site Mitigation will protect the existing vegetation in place where practical and will replace any displaced native riparian vegetation as part of implementation such that the total 2.75 acres of extant riparian vegetation will be protected or reestablished by the SRIP Off-Site Mitigation. That acreage will not be counted as part of the acreage that is credited as mitigation for the SRIP. Moreover, the SRIP Off-Site Mitigation will enhance and substantially increase the habitat area and value for these same species, resulting in a net benefit.

In addition, due to the known presence of southwestern pond turtle in the UC NRS Marsh the SRIP Off-Site Mitigation includes specifications to securely install silt fencing around the site perimeter (particularly on the west and northwest sides adjacent to the marsh) prior to site disturbance and to regularly inspect and maintain the fencing to prevent any turtles from wandering into the active construction area. This project design feature will prevent impacts to southwestern pond turtle that might otherwise venture into the site prior to or during construction.

The SRIP Off-Site Mitigation is planned to establish much higher quality habitat and will provide substantially greater acreage that will provide a net benefit to these and other species but the impact of displacing existing habitat, albeit of lower value, must still be acknowledged. Specific mitigation to address impacts to existing habitat are addressed below under Significance Threshold – Issue 2. The temporary loss of marginally suitable habitat of declining value for these special status species is substantially offset by replacement with higher value habitat that will be conserved and managed in perpetuity by IRWD. In addition, white-tailed kite, least Bell's vireo, and California gnatcatcher are Covered species under the NCCP/HCP. Therefore, since IRWD is a signatory to the NCCP/HCP and both the SRIP and the SRIP Off-Site Mitigation must follow the applicable guidelines of the NCCP/HCP, any take of these species, including take of habitat, is covered by the NCCP/HCP. However, since the SRIP Off-Site Mitigation could result in direct impacts to special status wildlife during construction, if present, certain precautions and seasonal restrictions will be implemented to avoid or minimize such effects. Mitigation Measure (MM) BIO-2 and MM BIO-3, which are required to be implemented for the SRIP, will also be implemented for the San Joaquin Marsh Habitat Mitigation.

The SRIP Off-Site Mitigation will comply with the NCCP/HCP as required, since IRWD is a signatory participating agency. Furthermore, MM BIO-2 and MM BIO-3 will be implemented on the SRIP Off-Site

Mitigation as also specified for the SRIP. Finally, the project design feature that requires installation and maintenance of silt fencing to exclude pond turtle from the area will be enforced during implementation. Based on these considerations, the potential for the SRIP Off-Site Mitigation to have a substantial adverse effect on special-status species would be **less than significant with mitigation implementation**.

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

The SRIP Off-Site Mitigation will displace patches of remnant black willow and mule fat riparian scrub habitat amounting to a total of 2.75 acres in the central portion of the SRIP Off-Site Mitigation site, unless some patch areas may be avoided during grading and grubbing, which may not be practical. As noted previously, although this habitat on-site is in a degraded condition and appears to continue to be declining in health and vigor, these patches of vegetation are still considered to represent sensitive habitat. In addition, the SRIP Off-Site Mitigation will result in the removal of up to approximately 1.8 acres of sensitive upland scrub habitat where it occurs in the central and southeastern part of the site. This habitat would be preserved where it occurs on the slope along Campus Drive and along the levee, since the slope areas are not proposed to be grubbed or graded except where the proposed water supply pipeline would enter and discharge into the site. Finally, the patches of alkali heath that amount to approximately 0.39-acre in the aggregate in the southwestern part of the site are expected to be removed by grubbing and grading. Some patches of alkali heath may be preserved where they will not interfere with establishing the requisite drainage pattern for the riparian woodland habitat.

The SRIP Off-Site Mitigation is planned to establish much higher quality habitat than the existing vegetation over the entire SRIP Off-Site Mitigation site to provide net benefits to wildlife and improve other functions and values. Nevertheless, the impact of displacing existing habitat, albeit of lower value, must still be acknowledged and addressed.

Therefore, as described above, the final plans for the SRIP Off-Site Mitigation will provide for the replacement of alkali heath patches that cannot practically be avoided during construction, up to 0.39 acre. Likewise, any acreage of the remnant willow woodland, mulefat scrub and mixed willow/tree of heaven that is removed during construction will also be replaced with native riparian scrub and woodland vegetation, up to the total 2.75 acres which will not be counted as off-site mitigation for the SRIP. Therefore, the SRIP Off-Site Mitigation will not result in a loss of any habitat acreage of riparian woodland and scrub vegetation or any alkali heath patches.

Likewise, the SRIP Off-Site Mitigation is expected to establish as much as 2.2 acres of native CSS vegetation on the slope of the berms that will be constructed to define and contain the riparian and wetland habitat areas. That will offset the impact of removing the upland scrub vegetation in the lower parts of the existing SRIP Off-Site Mitigation site.

After deducting the off-site mitigation for SRIP and the 1:1 habitat replacement for on-site impacts, any additional habitat acreage created may be used by IRWD to compensate for impacts resulting from other IRWD projects, subject to wildlife agency consideration and associated permit requirements.

Therefore, with the provision to count some of the created habitat as an offset for temporary impacts resulting from grubbing and grading, and with recognition of the SRIP Off-Site Mitigation's net benefit by replacing and

expanding the acreage and quality of these habitats with the commitment to long-term management, the SRIP Off-Site Mitigation will result in a **less than significant impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

Significance Threshold – Issue 3: Would the proposed project have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means?

It must be noted that the SRIP Off-Site Mitigation will establish new habitat areas similar to the open water, tule marsh, and woody riparian habitats that have existed on IRWD property north of Campus Drive for many years. Like those well-established areas across Campus Drive, the habitat planned to be created on the subject property will also depend on irrigation supplied artificially by pumping from San Diego Creek and the new habitat would be managed by IRWD solely for conservation purposes.

No wetlands or “waters” subject to state or federal regulatory jurisdiction, such as “waters of the United States” (pursuant to CWA Section 404), or “waters of the State” (pursuant to Porter-Cologne), or streams or lakes (pursuant to California Fish and Game Code Section 1600) occur on the SRIP Off-Site Mitigation site.

Furthermore, no potential adverse impacts are anticipated to occur to areas under regulatory jurisdiction off-site. During planning and coordination with the wildlife agencies, CDFW raised a concern regarding the potential for the SRIP Off-Site Mitigation to result in adverse effects to riparian habitat in San Diego Creek (i.e., protected wetlands habitat) by drawing water out of the Creek to supply the habitat mitigation. To address the concern, ESA hydrologists performed a thorough evaluation to determine what the potential drawdown would be and whether that could impact riparian habitat in the Creek downstream from the intake (ESA Technical Memorandum, April 2022). The evaluation concluded that most of the water would be drawn during the late winter and early spring when water levels are relatively high so effects would be minimal (or none), and even when lesser amounts were withdrawn at other times that the water level in the Creek downstream would not be lowered substantially.

Therefore, the SRIP Off-Site Mitigation would have **no impact** involving a substantial adverse effect on State or federally protected wetlands.

Significance Threshold – Issue 4: Would the proposed project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

San Diego Creek is likely to function as a route for local, urban-adapted and sensitive wildlife species to move through this part of the City of Irvine. The SRIP Off-Site Mitigation would not directly affect this feature. During implementation activities, work would be substantially limited to daytime working hours. Since local wildlife movement occurs primarily between dusk and dawn, and no nighttime work is planned or proposed, the SRIP Off-Site Mitigation would not be expected to adversely affect local wildlife movement. Therefore, the SRIP Off-Site Mitigation is expected to have a **less than significant impact** because it will not interfere substantially with local wildlife movement.

No native wildlife nursery sites are known to occur on the SRIP Off-Site Mitigation site or in the immediate site vicinity. However, the UC property may support nursery sites in the general area and certainly provides habitat for nesting birds in adjacent areas where they could be subject to disturbance during construction. In addition, some bird species could potentially nest on the SRIP Off-Site Mitigation site. Thus, although the SRIP Off-Site Mitigation is not expected to directly affect any native wildlife nursery sites, it is determined that it has the potential to impact nesting birds and could possibly disturb rookeries (e.g., black-crowned night heron) or nursery sites, if present in the near vicinity. Therefore, the relevant mitigation measures pertaining to avoiding such impacts, as set forth in the SRIP EIR (**MM Bio-2, MM Bio 3**), will also be required to be implemented for the Habitat Mitigation. Therefore, the impacts on these resources would be **less than significant with mitigation implementation** with regard to potential adverse effects on nesting birds.

Significance Threshold – Issue 5: Would the proposed project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Trees within the SRIP Off-Site Mitigation site that are not within a public right-of-way are not generally subject to the City of Irvine’s Tree Preservation Ordinance. The City requires applicants to obtain a tree removal permit only for trees located in the public right-of-way and for trees considered significant by the City of Irvine Municipal Code, including trees in established eucalyptus windrows. The remnant trees from the abandoned willow grove and other non-native trees or tall shrubs on the SRIP Off-Site Mitigation site would not fall under the definition of significant trees.

Therefore, the SRIP Off-Site Mitigation would have **no impact** in terms of any potential conflict with the City’s tree preservation ordinance.

Significance Threshold – Issue 6: Would the proposed project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The SRIP Off-Site Mitigation site is situated entirely within an area of the Orange County Central-Coastal NCCP/HCP that is designated as “Non-Reserve Open Space” and as such is still subject to the NCCP/HCP requirements, particularly since it is under the ownership of a Participating landowner (IRWD). Furthermore, IRWD is a signatory agency to the NCCP/HCP and is bound to adhere to the relevant guidelines and applicable provisions established by the NCCP/HCP and the Implementing Agreement. According to the Implementing Agreement, “take of Identified [i.e., “covered”] Species related to Planned Activities in the Central-Coastal Subregion, but outside the Reserve System, on lands owned or controlled by Participating Landowners as of the Effective Date is authorized” as described in the Agreement. In this case, the SRIP Off-Site Mitigation is the off-site mitigation for the SRIP, which is identified in the NCCP as a Planned Activity. In the case of the SRIP Off-Site Mitigation, direct take of certain Identified Species (e.g., California gnatcatcher, least Bell’s vireo, and white-tailed kite) that may occur or forage on-site should be avoided via implementation of mitigation measures, and no net loss of CSS habitat is expected to result from the SRIP Off-Site Mitigation. However, some temporary loss of habitat will occur until new habitat areas are established, and that temporal impact is understood to be covered by participation in and adherence to the provisions of the NCCP.

Therefore, implementation of the SRIP Off-Site Mitigation will have **no impact** with respect to a conflict with the O.C> Central-Coastal NCCP/HCP or its provisions.

Required Mitigation Measures

The following mitigation measures MM BIO-2 and MM BIO-3 are carried forward from the SRIP EIR and will be implemented to avoid or minimize potential impacts associated with implementation of the SRIP Off-Site Mitigation. These measures are primarily related to nesting birds and compliance with the NCCP/HCP. A supplemental precautionary measure is also included below to prevent entry into the site by any southwestern pond turtles during construction. As of September 29, 2023, when USFWS proposed both northwestern and southwestern pond turtles for listing as federally Threatened species, pond turtles are now protected from take in the same manner as other federally listed Threatened species. Therefore, it will be important to assure complete avoidance of potential take associated with implementing the SRIP Off-Site Mitigation.

MM BIO-2: IRWD will implement the following:

- a. In accordance with the NCCP/HCP, certain construction-related mitigation measures are required to minimize impacts to the coastal California gnatcatcher and other coastal sage scrub species. The removal of coastal sage scrub communities will be conducted in compliance with the NCCP/HCP's Construction Related Minimization Measures:
 1. To the maximum extent practicable, no grading of coastal sage scrub habitat that is occupied by nesting gnatcatchers will occur during the breeding season (February 15 through July 15).
 2. Prior to the commencement of grading operations or other activities involving significant soil disturbance, all areas of coastal sage scrub habitat to be avoided under the provisions of the NCCP/HCP shall be identified with temporary fencing or other markers clearly visible to construction personnel. Additionally, prior to the commencement of grading operations or other activities involving disturbance of coastal sage scrub, a survey will be conducted to locate gnatcatchers and cactus wrens within 100 feet of the outer extent of projected soil disturbance activities and the locations of any such species shall be clearly marked and identified on the construction/grading plans.
 3. A monitoring biologist, acceptable to USFWS/CDFW, will be on-site during any clearing of coastal sage scrub. IRWD will advise USFWS/CDFW at least seven calendar days (and preferably fourteen calendar days) prior to the clearing of any habitat occupied by Identified Species to allow USFWS/CDFW to work with the monitoring biologist in connection with bird flushing/capture activities. The monitoring biologist will flush Identified Species (avian or other mobile Identified Species) from occupied habitat areas immediately prior to brush-clearing and earth-moving activities. If birds cannot be flushed, they will be captured in mist nets, if feasible, and relocated to areas of the site to be protected or to the NCCP/HCP Reserve System. It will be the responsibility of the monitoring biologist to assure that Identified bird species will not be directly impacted by brush-clearing and earth-moving equipment in a manner that also allows for construction activities on a timely basis.
 4. Following the completion of initial grading/earth moving activities, all areas of coastal sage scrub habitat to be avoided by construction equipment and personnel will be marked with temporary fencing and other appropriate markers clearly visible to construction personnel. No construction access, parking, or storage of equipment or materials will be permitted within such marked areas.
 5. In areas bordering the NCCP Reserve System or Special Linkage/Special Management areas containing significant coastal sage scrub identified in the NCCP/HCP for protection,

vehicle/equipment transportation routes and staging areas will be restricted to a minimum number during construction consistent with project construction requirements. Waste dirt or rubble will not be deposited on adjacent coastal sage scrub identified in the NCCP/HCP for protection. Pre-construction meetings involving the monitoring biologist, construction supervisors, and equipment operators will be conducted and documented to ensure maximum practicable adherence to these measures.

6. Coastal sage scrub identified in the NCCP/HCP for protection and located within the likely dust drift radius of construction areas shall be periodically sprayed with water to reduce accumulated dust on the leaves as recommended by the monitoring biologist.

MM BIO-3: Impacts to nesting birds would be avoided by conducting all clearing and grubbing outside of the bird nesting season (i.e., work should occur September 1 to February 14, or July 1 to January 14 for raptors). If clearing and grubbing cannot avoid the bird nesting season, the following measures would be implemented:

- a. Prior to work during the bird nesting season (February 15 to August 31, or January 15 to June 31 for raptors), a qualified biologist should conduct a pre-construction survey of all suitable habitat for the presence of nesting birds no more than 7 days prior to construction and/or maintenance activities. The results of the pre-construction survey would be valid for 7 days; if vegetation removal activities do not commence within 7 days following the survey, a new pre-construction nesting bird survey should be conducted before these activities begin again. If no active nests are found, then no further mitigation is required.
- b. If any active nests are found during a pre-construction nesting bird survey, a buffer of 300 feet (500 feet for raptors), or as determined appropriate by the qualified biologist (based on species-specific tolerances and site-specific conditions) in consultation with IRWD, would be delineated, flagged, and avoided until the nesting cycle is complete (i.e., the qualified biologist determines that the young have fledged or the nest has failed). The qualified biologist may also recommend other measures to minimize disturbances to the nest, which may include, but are not limited to, erection of sound barriers (e.g., noise blankets), erection of visual barriers (e.g., hay bales), or full-time monitoring by a qualified biologist.

References

- American Ornithologists' Union. 1983 (and supplements). The A.O.U. Check-List of North American Birds. 6th ed. Allen Press. Lawrence, Kansas.
- Baldwin, et al. 2012. Jepson Manual: Vascular Plants of California; Second Edition. University of California Press.
- Bowler, Peter A., Elvin, Mark A., 2004. Vascular Plant Checklist for the University of California Natural Reserve System's San Joaquin Freshwater Marsh Reserve. *Crossosoma* 29(2), Fall-Winter 2003. Issued in Aug. 2004. 22 pp.
- Calflora. 2023. Information on Wild California Plants.
- California Department of Fish and Wildlife (CDFW). 1990. Life history accounts for species in the California Wildlife Habitat Relationships (CWHR) System were originally published in: Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

- California Department of Fish and Wildlife (CDFW). June, 2023. Natural Communities List. Accessed on July 15, 2023, at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline>.
- California Department of Fish and Wildlife (CDFW). 2023. California Natural Diversity Database (CNDDDB) RareFind 5. CDFW’s Electronic database, Sacramento, California. Accessed on May 22, 2023, at <https://www.dfg.ca.gov/biogeodata/cnddb>.
- California Native Plant Society (CNPS). 2023. Inventory of Rare and Endangered Plants (online edition, v7-09b). Sacramento, CA. Accessed on June 15, 2023 at <http://www.rareplants.cnps.org>.
- Dudek 2011. Jurisdictional Delineation-San Joaquin Marsh Natural Treatment System 62 and Small Area Mitigation Site Project.
- ESA 2022. Technical Memorandum (April 22, 2022) Response to USFWS & CDFW Questions (including: San Diego Creek Flow Diversion Considering Peters Canyon Diversions and Climate Change). 13 pp. plus appendices.
- ESA 2023. San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study for the Syphon Reservoir Project.
- Google Earth Pro. 2023. Aerial Imagery. Accessed April 15, 2023.
- Hickman, James C. ed. 1993. The Jepson Manual. University of California Press, Berkeley and Los Angeles, California.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation. 2nd Edition. California Native Plant Society.
- South Coast Wildlands. 2008 South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion. <http://www.scwildlands.org>.
- Stebbins, Robert. 1985. Western Reptiles and Amphibians. Houghton Mifflin Company, New York.
- U.S. Army Corps of Engineers (USACE). 2022. National Wetland Plants List (including 2022 updates). Accessed May 22, 2023. Available: https://wetland-plants.sec.usace.army.mil/nwpl_static/v34/home/home.html#
- United States Department of Agricultural, Natural Resources Conservation Service (NCRS). 2019a. Web Soil Survey. Accessed May 19, 2023. Available: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- U.S. Fish and Wildlife Service (USFWS 2023). Sept. 29, 2023. *USFWS proposes federal protections for both species of western pond turtle under the Endangered Species Act*. Press Release. <https://www.fws.gov/press-release/2023-09/us-fish-and-wildlife-service-proposes-federal-protections-both-species>.

Appendix A
**Special Status Plants – Potential to
Occur**

**APPENDIX A SPECIAL-STATUS WILDLIFE SPECIES
POTENTIAL TO OCCUR**

Common Name Scientific Name	Status	Preferred Habitat/Known Elevational Range	Potential to Occur On-Site
Reptiles			
southwestern pond turtle <i>Actinemys pallida</i>	FPT; SSC	Known to occur in slow-moving permanent or intermittent streams, ponds, small lakes, rivers, streams, marshes and reservoirs with basking sites, and either rocky or muddy bottoms. Adjacent uplands used during winter.	Low. Suitable pond habitat is absent on the subject property and this species would not be likely to occur frequently on-site, if at all, as pond turtles depend on the presence of open water. However, individuals have been directly observed basking in ponded areas in the UC Marsh Reserve approximately 1,500 feet northwest of the subject property limits and others could occur in ponds that are closer to the Project Site. Therefore, it is possible this species could wander onto the subject property or use the site occasionally during winter months.
Birds			
grasshopper sparrow <i>Ammodramus savannarum</i>	SSC (nesting)	Known to occur in dense grasslands on rolling hills, lowland plains, in valleys & on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs & scattered shrubs.	Not Expected. Suitable grassland habitat is not present on-site. CNDDDB record is from 2003 in nearby natural grasslands overlooking UC Marsh.
white-tailed kite <i>Elanus leucurus</i>	FP; NCCP C	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes nest to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Observed (Foraging). Suitable foraging habitat occurs on-site and this species has been observed often in recent years foraging in similar vegetation on the adjacent UC Reserve property. However, nesting is deemed unlikely as few trees remain and those are not tall and lack dense canopy this species favors.
yellow-breasted chat <i>Icteria virens</i>	SSC	Known to occur within riparian forest, scrub and woodland habitats.	Low to Moderate. Limited areas suitable as foraging habitat are present but nesting opportunities are relatively poor. The most recent report is dated 2003 within 1 mile of the subject property (CNDDDB 2023).
light-footed Ridgway's rail <i>Rallus obsoletus levipes</i>	FE/SE; FP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on mollusks and crustaceans.	Not Expected. This species is reported to occur at least occasionally at the UC Marsh Reserve. However, breeding habitat is absent from the Project Site and this species is not expected to forage in dry areas where ruderal vegetation is dominant. The most recent records (CNDDDB 2020) located this species within 1 mile of the site.
coastal California gnatcatcher <i>Polioptila californica californica</i>	FT/ST; NCCP C	Obligate, permanent resident of coastal sage scrub habitats dominated by Ca. sagebrush and Ca. buckwheat, mainly on cismontane slopes below 1,500 feet in elevation. Low elevation coastal sage scrub in arid washes, on mesas and slopes.	Observed. Suitable habitat of marginal quality occurs on the slopes of the levee and next to Campus Drive on the Project Site. A recent CNDDDB record (2021) reported this species within 1 mile to the southwest. This species was also incidentally observed in CSS on the slope in the southeast corner of the property by an ESA biologist in 2021.

Common Name Scientific Name	Status	Preferred Habitat/Known Elevational Range	Potential to Occur On-Site
least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE NCCP CC	Known to occur in riparian forest, scrub, and woodland habitats. Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Highly territorial and nests primarily in willow, mule fat, or mesquite habitats.	Observed. Remnant riparian woodland and scrub vegetation on the Project Site is marginally suitable. This species nests annually in riparian woodland in adjacent San Diego Creek. During a site visit in May 2023 ESA biologists heard at least one individual calling on-site and just to the southwest in San Diego Creek.
Mammals			
western mastiff bat <i>Eumops perotis californicus</i>	SSC	Known to occur in habitat consisting of extensive open areas within dry desert washes, flood plains, chaparral, cismontane oak woodland, coastal scrub, open ponderosa pine forest, and grasslands. Roosts primarily in crevices in rock outcrops and buildings.	Not expected. No roosting habitat occurs on-site. This species was detected approximately 1 mile north of the subject property (CNDDDB 2023).

Key:

Federal Listings

FE = Listed as Endangered

FT = Listed as Threatened

FPT = Proposed for Listing as Threatened

State Listings

SE = Listed as Endangered

ST = Listed as Threatened

FP = Designated as a "Fully Protected Species" by CDFW code

SSC = Species of Special Concern (CDFW)

OC Central-Coastal NCCP/HCP Identified Species

NCCP C – Covered Species

NCCP CC – Conditionally Covered Species

Appendix B
**Special-Status Wildlife Potential to
Occur**

APPENDIX B SPECIAL-STATUS PLANT SPECIES
POTENTIAL TO OCCUR

Common Name <i>Scientific Name</i>	Flowering Period	Status	Preferred Habitat/Known Elevational Range	Presence/Potential to Occur within Biological Study Area
Dicots				
Coulter's saltbush <i>Atriplex coulteri</i>	Mar. - Oct	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grasslands. Typically located in alkali or clay soils. Elevation range: 10-1,510 feet (CNPS 2021).	Not Expected. No suitable habitat occurs on the Project Site. Limited upland scrub only occurs on the slopes of an artificially constructed levee and no natural CSS occurs on the site. The site has been substantially disturbed exhibits mostly dense ruderal vegetation. The most recent CNDDDB record is from 1998 and is located approximately 1 mile west of the site (CNDDDB 2023).
Davidson's saltscale <i>Atriplex serenana</i> var. <i> davidsonii</i>	April – Oct.	1B.2	Coastal bluff scrub, coastal scrub. Located on alkaline soils. Elevation range: 30 – 650 feet (CNPS 2021).	Not Expected. No undisturbed suitable habitat is present on the Project Site. Most recent CNDDDB record located less than 1 mile west of BSA (CNDDDB 2023).
southern tarplant <i>Centromadia parryi</i> ssp. <i> australis</i>	May - Nov.	1B.1	Margins of marshes and swamps, vernal pools, and valley and foothill grasslands. Elevation range: 0 - 1,575 feet (CNPS 2021).	Not Expected. Suitable habitat is lacking on the Project Site which lacks any ponded or saturated surface conditions. It is not impossible that this tarplant could occur along the edge of the levee or other disturbed access areas around the edge of the property since this plant is a disturbance follower. However, it is easily identified but has not been observed. The most recent CNDDDB record is located less than 1 mile west (CNDDDB 2023).
many-stemmed dudleya <i>Dudleya multicaulis</i>	April - July	1B.2	Chaparral, coastal scrub, and valley and foothill grasslands. Often located in clay soils. Elevation range: 50-2,590 feet (CNPS 2021).	Not Expected. Suitable open clay soil habitat is not present within the Project Site and the property is much too disturbed to support a natural population of this dudleya (see Coulter's saltbush entry). CNDDDB records identify occurrences located 1-2 miles from the site (CNDDDB 2023).
Coulter's goldfields <i>Lasthenia glabrata</i> ssp. <i> coulteri</i>	Feb. - Jun.	1B.1	Found in wetland habitats. Microhabitats include playas and vernal pools at elevations up to 1220 m.	Not Expected. Suitable habitat and soils are not present on-site or within the immediate vicinity. The most recent CNDDDB record is from 1934 1-2 miles northwest of the site and is presumed to have been extirpated.
Robinson's peppergrass <i>Lepidium virginicum</i> var. <i> robinsonii</i>	Jan. – July	4.3	Found within chaparral and coastal scrub habitats at elevations up to 885 m.	Not Expected. Suitable habitat is not present on-site or within the immediate vicinity (see Coulter's saltbush entry). A CNDDDB record from 2003 is located approximately 1 mile south of the Project Site (CNDDDB 2023).

Common Name Scientific Name	Flowering Period	Status	Preferred Habitat/Known Elevational Range	Presence/Potential to Occur within Biological Study Area
Key:				
Federal Listings				
FE = Listed as Endangered				
FT = Listed as Threatened				
State Listings				
SE = Listed as Endangered				
ST = Listed as Threatened				
California Rare Plant Rankings				
1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere				
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere (1B.1 Seriously Threatened in California, 1B.2 Fairly Threatened in California)				
2A: Plants Presumed Extirpated in California, But Common Elsewhere				
2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere				
3: Plants About Which More Information is Needed - A Review List				
4: Plants of Limited Distribution - A Watch List				
 <i>SOURCE: Calflora, CNDDDB, and CNPS</i>				
