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INITIAL STUDY/MITIGATED NEGATIVE DECLARATION (IS/MND)

RIO VISTA WELL DEVELOPMENT PROJECT

SOLANO, SACRAMENTO, AND CONTRA COSTA COUNTIES, CALIFORNIA

Project No. 2502-0891

Prepared for:

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TABLE OF CONTENTS

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION I

1.0 INTRODUCTION 1-1

1.1 SUMMARY OF THE PROPOSED PROJECT 1-1
1.2 OBJECTIVES OF THE PROJECT 1-3
1.3 PURPOSE OF THE ENVIRONMENTAL REVIEW, INITIAL STUDY 1-3
1.4 AGENCY APPROVALS AND REGULATORY REQUIREMENTS 1-4

2.0 PROJECT DESCRIPTION 2-1

2.1 PROJECT LOCATION 2-2
2.1.1 Solano County 2-4
2.1.2 Sacramento County 2-5
2.1.3 Contra Costa County 2-7
2.1.4 Senate Bill 1137 2-8
2.2 EXISTING FACILITIES AND INFRASTRUCTURE 2-9
2.3 PROJECT FOOTPRINT 2-10
2.3.1 Well Pad/Access Road Components 2-10
2.3.2 Pipeline Installation and Remediation 2-11
2.3.3 Project Footprint and Disturbance Area 2-12
2.3.4 Alternative Well Pads 2-16
2.4 PROJECT CONSTRUCTION – WELL DRILLING PROGRAM 2-19
2.4.1 Well Site Preparation 2-19
2.4.2 Drilling Operations 2-21
2.4.3 Well Completion Activities 2-23
2.4.4 Pipeline Installation and Remediation 2-24
2.4.5 Equipment and Personnel Requirements 2-25
2.5 PROJECT OPERATION 2-30
2.6 BEST MANAGEMENT PRACTICES (BMPS) 2-31
2.7 DESIGN FEATURES AND REGULATORY REQUIREMENTS 2-33

3.0 ENVIRONMENTAL SETTING AND BASELINE 3-1

3.1 SOLANO COUNTY 3-1
3.2 SACRAMENTO COUNTY 3-2
3.3 CONTRA COSTA COUNTY 3-2

4.0 SUMMARY OF FINDINGS 4-1

4.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED 4-1
4.2 ENVIRONMENTAL DETERMINATION 4-1

5.0 ENVIRONMENTAL ANALYSIS AND INITIAL STUDY CHECKLIST 5-1

5.1 AESTHETICS 5-2
5.1.1 Environmental Setting 5-2
5.1.2 Regulatory Setting 5-6
5.1.3 Impact Analysis 5-6
5.1.4 Mitigation Measures 5-9
5.2 AGRICULTURE AND FORESTRY RESOURCES 5-10
5.2.1 Environmental Setting 5-11
5.2.2 Regulatory Setting 5-14
5.2.3 Impact Analysis 5-15
5.2.4 Mitigation Measures 5-17
5.3 AIR QUALITY 5-18
5.3.1 Environmental Setting 5-18
5.3.2 Regulatory Setting 5-23
5.3.3 Impact Analysis 5-38
5.3.4 Mitigation Measures 5-45
5.4 BIOLOGICAL RESOURCES 5-46
5.4.1 Environmental Setting 5-47
5.4.2 Regulatory Setting 5-59
5.4.3 Impact Analysis 5-70
5.4.4 Mitigation Measures 5-95
5.5 CULTURAL RESOURCES 5-97
5.5.1 Environmental Setting 5-97
5.5.2 Regulatory Setting 5-101
5.5.3 Impact Analysis 5-107
5.5.4 Mitigation Measures 5-111
5.6 ENERGY 5-112
5.6.1 Environmental Setting 5-112
5.6.2 Regulatory Setting 5-113
5.6.3 Impact Analysis 5-114
5.6.4 Mitigation Measures 5-115
5.7 GEOLOGY AND SOILS 5-116
5.7.1 Environmental Setting 5-117
5.7.2 Regulatory Setting 5-121
5.7.3 Impact Analysis 5-126
5.7.4 Mitigation Measures 5-131
5.8 GREENHOUSE GAS EMISSIONS 5-132
5.8.1 Environmental Setting 5-132
5.8.2 Regulatory Setting 5-133
5.8.3 Impact Analysis 5-139
5.8.4 Mitigation Measures 5-142
5.9 HAZARDS AND HAZARDOUS MATERIALS 5-143

5.9.1 Environmental Setting 5-144
5.9.2 Regulatory Setting 5-149
5.9.3 Impact Analysis 5-157
5.9.4 Mitigation Measures 5-162
5.10 HYDROLOGY AND WATER QUALITY 5-163
5.10.1 Environmental Setting 5-164
5.10.2 Regulatory Setting 5-167
5.10.3 Impact Analysis 5-174
5.10.4 Mitigation Measures 5-179
5.11 LAND USE AND PLANNING 5-180
5.11.1 Environmental Setting 5-180
5.11.2 Regulatory Setting 5-182
5.11.3 Impact Analysis 5-184
5.11.4 Mitigation Measures 5-190
5.12 MINERAL RESOURCES 5-191
5.12.1 Environmental Setting 5-191
5.12.2 Regulatory Setting 5-192
5.12.3 Impact Analysis 5-193
5.12.4 Mitigation Measures 5-193
5.13 NOISE 5-194
5.13.1 Environmental Setting 5-194
5.13.2 Regulatory Setting 5-201
5.13.3 Impact Analysis 5-206
5.13.4 Mitigation Measures 5-214
5.14 POPULATION AND HOUSING 5-215
5.14.1 Environmental Setting 5-215
5.14.2 Regulatory Setting 5-215
5.14.3 Impact Analysis 5-215
5.14.4 Mitigation Measures 5-217
5.15 PUBLIC SERVICES 5-218
5.15.1 Environmental Setting 5-218
5.15.2 Regulatory Setting 5-222
5.15.3 Impact Analysis 5-223
5.15.4 Mitigation Measures 5-224
5.16 RECREATION 5-225
5.16.1 Environmental Setting 5-225
5.16.2 Regulatory Setting 5-226
5.16.3 Impact Analysis 5-226
5.16.4 Mitigation Measures 5-226
5.17 TRANSPORTATION 5-227
5.17.1 Environmental Setting 5-227
5.17.2 Regulatory Setting 5-228
5.17.3 Impact Analysis 5-230

5.17.4 Mitigation Measures....5-231
5.18 TRIBAL CULTURAL RESOURCES....5-232
5.18.1 Environmental Setting....5-233
5.18.2 Regulatory Setting....5-240
5.18.3 Impact Analysis....5-244
5.18.4 Mitigation Measures....5-250
5.19 UTILITIES AND SERVICE SYSTEMS....5-251
5.19.1 Environmental Setting....5-252
5.19.2 Regulatory Setting....5-253
5.19.3 Impact Analysis....5-253
5.19.4 Mitigation Measures....5-255
5.20 WILDFIRE....5-256
5.20.1 Environmental Setting....5-256
5.20.2 Regulatory Setting....5-257
5.20.3 Impact Analysis....5-259
5.20.4 Mitigation Measures....5-260
5.21 MANDATORY FINDINGS OF SIGNIFICANCE....5-261

6.0 MITIGATION MONITORING AND REPORTING PROGRAM....6-1

6.1 MITIGATION REQUIREMENTS....6-1

7.0 REPORT PREPARATION AND REFERENCES....7-1

7.1 CALIFORNIA DEPARTMENT OF CONSERVATION, GEOLOGIC ENERGY MANAGEMENT DIVISION (CALGEM)....7-1
7.2 PADRE ASSOCIATES....7-1
7.3 REFERENCES....7-3

LIST OF FIGURES

Figure 1-1. Project Location 1-2
Figure 2-1. Project Area 2-3
Figure 2-2. Alternative Well Pads 2-18
Figure 3-1. Representative Photographs of the Proposed Rio Vista Well Pad/Access Road Areas 3-4
Figure 5.1-1. Solano County: SOL-1 Well Pad Area. Aspect: Northwest 5-3
Figure 5.1-2a. Sacramento County: Proposed Area for SAC-BR-2 Well Pad. Aspect: East 5-4
Figure 5.1-2b. Sacramento County: Proposed Area for SAC-TW-3 Well Pad, Twitchell Island. Aspect: North 5-4
Figure 5.1-3. Contra Costa County: Proposed Area for CC-1, Bradford Island Well Pad. Aspect: North 5-5
Figure 5.2-1. Important Farmland in the Project Area 5-13
Figure 5.4-1. Wetlands and Waterways of the Project Area 5-55

LIST OF TABLES

Table 1-1. Anticipated Agencies with Review/Approval over Project Activities. 1-4
Table 2-1. Number of Wells and Well Pads by County 2-1
Table 2.1-1. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Solano County 2-4
Table 2.1-2. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Sacramento County 2-5
Table 2.1-3. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Contra Costa County 2-8
Table 2.3-1. Estimated Project Footprint and Disturbance Area 2-13
Table 2.3-2 Disturbance Areas of Alternative Project Components 2-16
Table 2.4-1. Gravel Import Associated with Well Pad/Access Roads 2-19
Table 2.4-2. Estimated Well Development Schedule 2-25
Table 2.4-3. Onsite Equipment Requirements All Counties (Per Well) 2-25
Table 2.4-4. Mobile Equipment Sources by County 2-27
Table 2.4-4a. Solano County Mobile Equipment Sources 2-27
Table 2.4-4b. Sacramento County Mobile Equipment Sources 2-28
Table 2.4-4c. Contra Costa County Mobile Equipment Sources 2-29
Table 2.7-1. Project Design Features and Regulatory Requirements 2-34
Table 4-1. Environmental Issues and Potentially Significant Impacts 4-1

Table 5.3-1 Nearest Sensitive Receptors 5-20
Table 5.3-2. Ambient Air Quality Standards (State and Federal) 5-24
Table 5.3-3. Air Quality Attainment Status per County 5-27
Table 5.3-4. Construction Air Quality Thresholds of Significance 5-38
Table 5.3-5. Operational Air Quality Thresholds of Significance 5-38
Table 5.3-6. Estimated Peak Daily Construction Criteria Pollutant Emissions 5-39
Table 5.3-7. Estimated Construction Yearly Air Pollutant Emissions 5-41
Table 5.3-8. Estimated Peak Daily Operational Criteria Pollutant Emissions 5-41
Table 5.3-9 Estimated Yearly Operational Criteria Pollutant Emissions 5-41
Table 5.4-1. Project Components Within or Near Wetlands and Potential Wetland Impacts 5-56
Table 5.4-2. Swainson's Hawk Foraging Habitat Mitigation Ratios 5-82
Table 5.5-1. Previously Recorded Cultural Resources within the Project Site and Buffer 5-100
Table 5.8-1. Estimated Construction Related Greenhouse Gas Emissions 5-140
Table 5.8-2. Estimated Operation Related Greenhouse Gas Emissions 5-140
Table 5.11-1. Land Designations and Zoning Regulations by County 5-181
Table 5.11-2. Summary of Project Consistency with Local Land Use Policies 5-185
Table 5.13-1 Nearest Sensitive Receptors 5-195
Table 5.13-2. Common Sound Levels/Sources and Subjective Human Responses 5-197
Table 5.13-3. Vibration Annoyance Potential Criteria 5-200
Table 5.13-4. Vibration Damage Potential Threshold Criteria 5-200
Table 5.13-5. Maximum Allowable Noise Exposure by Use Contra Costa County 5-202
Table 5.13-6. Non-Transportation Noise Standards Sacramento County 5-203
Table 5.13-7. Non-Transportation Noise Standards, Solano County 5-205
Table 5.13-8. Predicted Construction Exterior Noise Levels – Contra Costa County 5-206
Table 5.13-9. Predicted Construction Exterior Noise Levels – Sacramento County 5-209
Table 5.13-10. Predicted Construction Exterior Noise Levels – Solano County. 5-211
Table 5.15-1. Summary of Closest Public Service Providers to Project Area Per County 5-219
Table 5.17-1. Characteristics of Roadways to be Used for Project Access 5-228
Table 6-1. Mitigation Monitoring and Reporting Program 6-0

APPENDICES

APPENDIX A: WELL DESCRIPTIONS

APPENDIX B: DRILLING RIG LAYOUT

APPENDIX C: AIR QUALITY AND GREENHOUSE GAS EMISSIONS TABLES

APPENDIX D: PHASE 1 ARCHEOLOGICAL STUDY REPORT AND ARCHEOLOGICAL RECORDS SEARCHES (CONFIDENTIAL)

APPENDIX E: BIOLOGICAL TECHNICAL REPORT

APPENDIX F: STAFF REPORT ON BURROWING OWL MITIGATION

LIST OF ACRONYMS

Acronym	Definition
AB	Assembly Bill
API	American Petroleum Institute
APN	Assessor's Parcel Number
AQMD	Air Quality Management District
BAAQMD	Bay Area Air Quality Management District
Bbl	Barrels
BMPs	Best Management Practices
BOPE	Blowout Prevention Equipment
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
CalGEM	California Division of Geologic Energy Management
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
OPR	California Governor's Office of Planning and Research
CGS	California Geological Survey
CH_4	Methane
CNDDB	California Natural Diversity Database
CNEL	Community Noise Level Equivalent
CO	Carbon Monoxide
CO_2	Carbon Dioxide

CRPC	California Resources Production Corporation
CRHR	California Register of Historical Resources
CTR	California Toxics Rule
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	Decibels
DFPD	Delta Fire Protection District
DOC	California Department of Conservation
DOT	United States Department of Transportation
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EIR	Environmental Impact Report
EMFAC	Emission Factor Model
EPA	United States Environmental Protection Agency
ERCs	Emission Reduction Credits
ESA	Environmentally Sensitive Area
FAA	Federal Aviation Administration
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
GHG	Greenhouse Gas
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
GWh	gigawatt hours
H_2S	Hydrogen Sulfide
HCP	Habitat Conservation Plan
HPZ	Health Protection Zones
ICC	International Code Council
IGP	General Industrial Activities Stormwater Permit
IPCC	Intergovernmental Panel on Climate Change
IS/MND	Initial Study/Mitigated Negative Declaration
Ldn	Day-Night Average Sound Level
LED	Light-emitting diode

Leq	Energy Equivalent Sound Level
Lmax	Maximum Sound Level
LOS	Level of Service
LRA	Locally Responsible Area
LSND	Low solids, non-dispersed
MBTA	Migratory Bird Treaty Act
MFPD	Montezuma Fire Protection District
MM	Mitigation Measure
MMRP	Mitigation Monitoring and Reporting Program
MRZ	Mineral Resource Zone
$MTCO_2E$	Million Tons of Carbon Dioxide Equivalent
n/a	Not applicable or not available
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEHRP	National Earthquake Hazards Reduction Program
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act of 1966
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
O_3	Ozone
OPS	Office of Pipeline Safety
OSHA	Occupational Safety and Health Administration
PERP	Portable Equipment Registration Program
P&A	Plug and Abandonment
PM_{10}	Particulate Matter of 10 Microns or Less
$PM_{2.5}$	Particulate Matter of 2.5 Microns or Less

ppm	Parts Per Million
PPV	Peak Particle Velocity
PRC	Public Resources Code
RCRA	Resource Conservation Recovery Act
RMP	Risk Management Plan
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SDWA	Safe Drinking Water Act
SFBAAB	San Francisco Bay Area Air Basin
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	Sulfur Dioxide
SCS	Sustainable Communities Strategy
SR	State Route
STLC	Soluble Threshold Limit Concentration
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TTLC	Total Threshold Limit Concentration
UCMP	University of California Museum of Paleontology
UIC	Underground Injection Control
USACE	Unites States Army Corps of Engineers
USB	Urban Services Boundary
USFWS	Unites States Fish and Wildlife Service
VMT	Vehicle Miles Traveled
WEAP	Worker Environmental Awareness Program
YSAQMD	Yolo-Solano Air Quality Management District

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Project Name:

Rio Vista Well Development Project

Lead Agency Name and Address:

California Department of Conservation
California Geologic Energy Management Division (CalGEM)
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Project Description and Purpose:

The Project involves the development of 83 new gas wells and associated equipment, facilities, and infrastructure within the Rio Vista Gas Field. Development of the Rio Vista Gas Field began in 1936, and approximately 200 wells have been drilled within the field over its operational history. These proposed well development activities are designed for exploration and production purposes, which will support future natural gas production and distribution to the surrounding region. A detailed Project description is provided in Section 2.0 of the attached Initial Study.

Project Location:

The Project is located in the Sacramento-San Joaquin River Delta region near the City of Rio Vista in northern California. The proposed wells are located in the Rio Vista Gas Field near State Route 12 within Solano, Sacramento, and Contra Costa Counties. The Project consists of approximately 141 acres and is comprised of the Assessor Parcel Numbers (APNs) included in Table 2-2 in the attached Initial Study. The subject property is currently owned and operated by CRPC and consists of an existing gas field that has been in operation since 1936 as one of the largest gas fields in California. Project location maps are provided below and in Appendix A.

Findings:

It is hereby determined that based on the information contained in the attached Initial Study, the Project, with implementation of mitigation measures listed therein, would not have a significant effect on the environment.

Mitigation measures necessary to avoid the potentially significant impacts on the environment are included in the Initial Study (IS), which is hereby incorporated and fully made part of this Mitigated Negative Declaration (MND). CRPC has reviewed and agreed to implement all mitigation measures in the Initial Study. A Mitigation Monitoring and Reporting Plan (MMRP) containing each mitigation measure in this Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared for adoption by the California Department of Conservation, Geologic Energy Management Division (CalGEM), as the lead agency. All mitigation measures outlined in the MMRP will be incorporated as Conditions of Approval in all permits for the Project to ensure that mitigation measures are implemented, as required.

Pursuant to Section 21082.1 of the California Environmental Quality Act (CEQA), CalGEM has independently reviewed and analyzed the IS/MND for the proposed Project and finds that this document reflects the independent judgement of CalGEM. CalGEM also confirms that the Project mitigation measures detailed in this document are feasible and will be implemented as stated in the IS/MND.

_____ _____

Signature Date

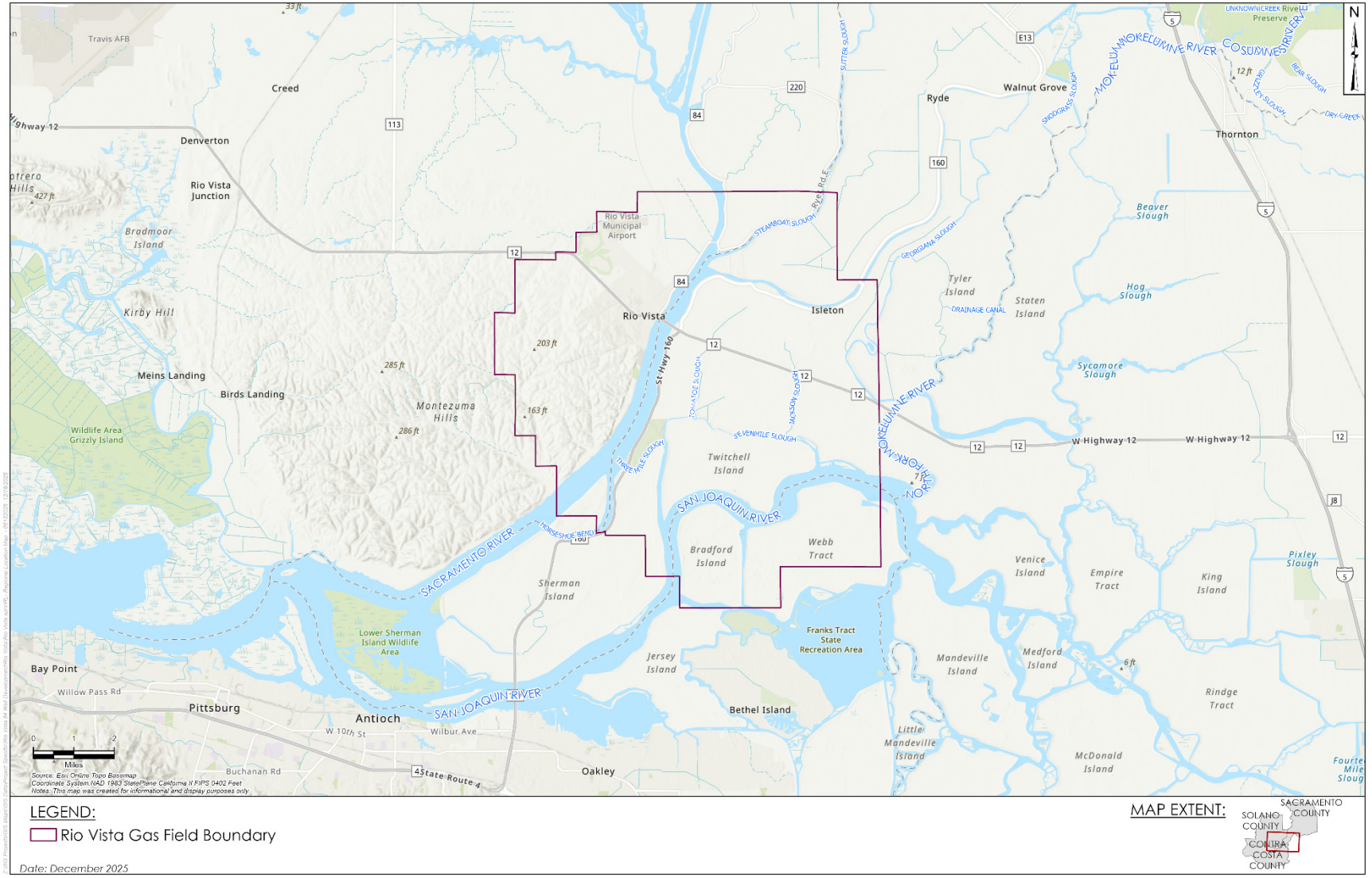
1.0 INTRODUCTION

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared on behalf of and with critical review, input, and policy expertise of the California Department of Conservation, Geologic Energy Management Division (CalGEM) pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], § 21000 et seq.) and the CEQA Guidelines (Title 14, California Code of Regulations § 15000, et seq).

1.1 SUMMARY OF THE PROPOSED PROJECT

California Resources Production Corporation (CRPC) is proposing the Rio Vista Well Development Project (Project), located within the Rio Vista Gas Field, in Solano, Sacramento, and Contra Costa Counties, California (Figure 1-1). This Project includes the construction of 83 new natural gas wells, as well as associated equipment, facilities, and infrastructure, within the CalGEM administrative boundary of the Rio Vista Gas Field. The Project area encompasses approximately 141 acres within the Rio Vista Gas Field. The Project area is located near State Route (SR) 12 on land intersected by the Sacramento River, San Joaquin River, and various sloughs, with the proposed 83 natural gas well locations spanning three counties: 39 wells in Solano County, 32 wells in Sacramento County, and 12 wells in Contra Costa County.

Figure 1-1. Project Location



1.2 OBJECTIVES OF THE PROJECT

The Project proposes to drill 83 new natural gas wells to tie into the existing natural gas distribution system in three counties: Solano, Sacramento, and Contra Costa. The primary objectives of the Project include the following:

- Provide for the safe, economically feasible and environmentally responsible ongoing development of gas assets in California.
- Provide for continued environmentally responsible gas exploration and production in Sacramento Valley region as a means of reducing California's dependence on foreign sources of energy, and ensuring continued tax revenue, employment opportunities and economic prosperity for county residents, businesses, and local government.
- Use existing well pads, roads, and other infrastructure where practical and feasible to minimize new land disturbance.
- Comply with the Senate Bill (SB) 1137 regulations and identify project locations outside of 3,200 feet of potential sensitive receptors.

CalGEM's objective is to respond to CRPC's proposal. As the CEQA lead agency for the project, the Department of Conservation, acting through CalGEM, is analyzing the project as a whole. With project implementation, natural gas production and maintenance activities would occur for the operational life of the wells. The timing for plugging and abandoning the wells, as well as decommissioning the attendant production facilities, and restoring the well pad sites would require separate CalGEM permits and associated CEQA analysis.

1.3 PURPOSE OF THE ENVIRONMENTAL REVIEW, INITIAL STUDY

This IS was prepared to evaluate the potential environmental effects of the proposed project and support CalGEM's decision-making regarding CRPC's proposal to drill the wells. An additional environmental assessment will be required regarding plugging and abandoning the wells and related work.

This approach is consistent with CEQA Guidelines Section 15004(b)(2), which allows phased environmental review where later phases are not yet defined with sufficient certainty to permit meaningful analysis. Plugging and abandonment (P&A) operations are excluded from this analysis as they constitute a distinct future discretionary action. The specific methods, equipment, timing, and site conditions applicable to P&A are not yet known and cannot be meaningfully evaluated at the drilling stage. Requiring speculative analysis of conditions potentially decades in the future would not improve CEQA review quality. Future discretionary action for P&A will be subject

to its own CEQA analysis at the time the wells reach the end of their productive life, earlier at the operator's election, or if CalGEM requires such work to protect life, health, property, or natural resources pursuant to Public Resources Code Section 3237.

1.4 AGENCY APPROVALS AND REGULATORY REQUIREMENTS

The proposed well pads are located within the Rio Vista Gas Field, as defined by CalGEM, in unincorporated areas of Solano, Sacramento, and Contra Costa Counties. The Project area is located within land designated as Grazing Land and Urban and Built-Up Land by Solano County, Agricultural Crop Land by Sacramento County, and Agricultural Lands by Contra Costa County.

Upon Project approval, CalGEM would adopt this IS/MND as the Lead Agency pursuant to CEQA. Prior to the initiation of drilling activities, CRPC would be required to submit a Notice of Intent (NOI) for each new drill to CalGEM for approval. Following the drilling of the proposed wells, the Project would be operated under CalGEM permit requirements. In addition to CalGEM requirements, other anticipated agency approvals or regulatory requirements for the Project are listed in Table 1-1 below.

Table 1-1. Anticipated Agencies with Review/Approval over Project Activities

Agency Level	Permitting Agency	Anticipated Approvals/ Regulatory Requirements
Federal	U.S. Army Corps of Engineers, Sacramento District	Section 404 Nationwide Permit (Clean Water Act)
State	California Geologic Energy Management Division (CalGEM)	CEQA Lead Agency; Drilling Permit (NOI)
State	California Department of Fish and Wildlife	Lake and Streambed Alteration Agreement; Section 1600 of the California Fish and Game Code
State	California Office of Historic Preservation	National Historic Preservation Act; Section 106 Compliance
State	Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification (Clean Water Act); National Pollutant Discharge Elimination System Permit
Local	Yolo-Solano Air Quality Management District	CEQA Air Quality Thresholds of Significance Compliance Authority to construct (ATC) and permit to operate (PTO) for compressors

Agency Level	Permitting Agency	Anticipated Approvals/ Regulatory Requirements
Local	Sacramento Metropolitan Air Quality Management District	CEQA Air Quality Thresholds of Significance Compliance ATC and PTO for compressors
Local	Bay Area Air Quality Management District	CEQA Air Quality Thresholds of Significance Compliance ATC and PTO for compressors
Local	Solano County Department of Resource Management, Planning Services and Public Works	Solano County General Plan, Land Use Permit; Solano County Code, Grading Permit
Local	Sacramento County Department of Community Development, Office of Planning and Environmental Review and County Engineering Division	Sacramento County General Plan, Conditional Use Permit; Sacramento County Code, Grading Permit
Local	Contra Costa County Department of Conservation and Development	Contra Costa County General Plan, Land Use Permit; Contra Costa Code, Grading Permit

2.0 PROJECT DESCRIPTION

Well development activities would include the construction of 83 natural gas wells within the Rio Vista Gas Field over approximately 6.8 years. For the purposes of this Project description, the operational life of the Project is assumed to be at least 30 years. The proposed 83 gas well locations are split between three counties: 39 wells in Solano County, 32 wells in Sacramento County, and 12 wells in Contra Costa County (Table 2-1).

Table 2-1. Number of Wells and Well Pads by County

County	No. of Wells	No. of Well Pads	No. of Pipelines
Solano	39	6	5
Sacramento	32	10	11
Contra Costa	12	1	1
Total	**83**	**17**	**17**

Associated infrastructure such as operational support equipment (e.g., water tanks, compressors) and new gas pipelines would also be installed and tied into the existing pipeline network within the Rio Vista Gas Field. In addition, pipeline remediation (replacement) is required for portions of the existing gas distribution system to accommodate the new gas wells through replacement of any existing pipelines that do not meet the minimum high-pressure rating.

The Project components include the proposed well pads and associated access roads (i.e., "well pad/access road"), which have been named within this analysis by county and island location as applicable and numbered by location from north to south starting at "1". The other Project components include the new proposed pipelines (i.e., "pipeline"), which are named by associated well pad or locational feature. Name abbreviations are as follows:

SOL – Solano County
SAC – Sacramento County
- BR – Brannan Island
- TW – Twitchell Island
- SH – Sherman Island

CC – Contra Costa County

Detailed tables showing the proposed area associated with each well pad/access road and associated pipeline(s) are included in Appendix A.

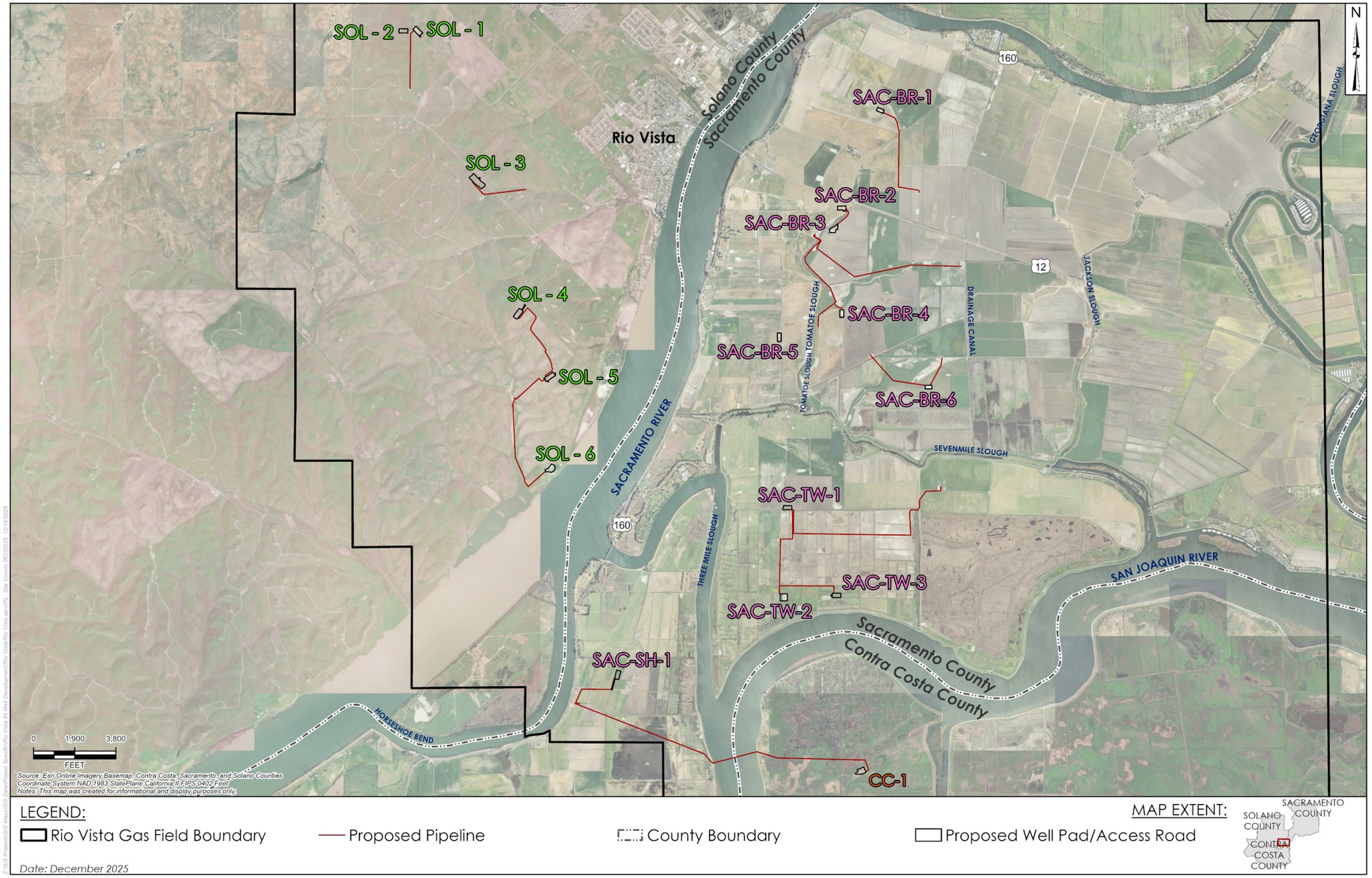
The Project will be conducted in two primary phases including well construction phase followed by Project operations (Sections 2.4 and 2.5). Well development

activities would be initiated in Solano County then proceed clockwise to Sacramento County and then Contra Costa County.

2.1 PROJECT LOCATION

The proposed Solano County wells are located in the eastern Montezuma Hills, between approximately 1.0 to 2.0 miles west and southwest of the City of Rio Vista; the proposed Sacramento County wells are located on the Brannan, Twitchell, and Sherman Islands between the Sacramento and San Joaquin Rivers, between approximately 0.8 to 2.0 miles east of the Sacramento River; and the proposed Contra Costa wells are located on Bradford Island approximately 1.0 mile south of the San Joaquin River (Figure 2-1).

Figure 2-1. Project Area



2.1.1 Solano County

The Project would include the drilling of 39 wells in Solano County, east of the Montezuma Hills and west and southwest of the City of Rio Vista. The Project would include six well pads with associated access roads and five associated 4-inch and 6-inch diameter pipelines, all located on private land. The well pads and pipelines would be distributed across multiple parcels in southeastern Solano County and would connect the new wells to existing natural gas infrastructure. Pipeline SOL-1 and Pipeline SOL-3 would replace existing pipelines only if pressure testing indicates that the existing pipelines do not meet the required high-pressure rating.

Table 2.1-1 summarizes the location information for the proposed natural gas wells, well pads/access roads, and pipelines proposed in Solano County.

Table 2.1-1. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Solano County

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
SOL-1 Well Pad/Access Road	3	0048120160	MDM-T04N-R02E-23	38.17223535, -121.73127773
SOL-2 Well Pad/Access Road	2	0048120040	MDM-T04N-R02E-22	38.17229382, -121.73359059
SOL-3 Well Pad/Access Road	17	0048130210	MDM-T04N-R02E-35	38.15321187, -121.72180988
SOL-4 Well Pad/Access Road	5	0090200040	MDM-T03N-R02E-2	38.13648772, -121.71522524
SOL-5 Well Pad/Access Road	6	0090200040	MDM-T03N-R02E-1	38.12840501, -121.71028716
SOL-6 Well Pad/Access Road	6	0090200050	MDM-T03N-R02E-12	38.11676898, -121.71014923
Pipeline SOL-1	N/A	0048120400	MDM-T04N-R02E-23, MDM-T04N-R02E-26	38.16875613, -121.73247918

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
Pipeline SOL-3	N/A	0048120030	MDM-T04N-R02E-27	38.16164301, -121.7485453
Pipeline SOL-4/5	N/A	0048130210, 0048130080, 0049310060	MDM-T04N-R02E-35	38.16164301, -121.7485453
Pipeline SOL-5/6	N/A	0090200040	MDM-T03N-R02E-1, MDM-T03N-R02E-2	38.13332734, -121.71213207
Pipeline SOL-6	N/A	0090200040	MDM-T03N-R02E-1, MDM-T03N-R02E-2	38.12709405, -121.71343697

2.1.2 Sacramento County

The Project would include the drilling of 32 wells within Sacramento County. A total of ten well pads and 11 pipelines would be established within this county for the Project: six well pads and seven pipelines on Brannan Island, three well pads and three pipelines on Twitchell Island, and one well pad and one pipeline on Sherman Island. All well pads and pipelines would be located on private land. In addition, one pipeline associated with the Project wells in Contra Costa County intersects the San Joaquin River and extends onto Sherman Island within Sacramento County. Pipeline installation at the river crossing would include the use of an existing underground conduit underneath the San Joaquin River. For location information about this pipeline and conduit, see Section 2.1.3 below.

Table 2.1-2 summarizes the location information for the proposed natural gas wells, well pads, and pipelines within Sacramento County.

Table 2.1-2. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Sacramento County

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
SAC-BR-1 Well Pad/Access Road	1	15700900610000	MDM-T04N-R03E-28, MDM-T04N-R03E-33	38.1620264, -121.65707526
SAC-BR-2 Well Pad/Access Road	3	15700900250000, 15701200010000	MDM-T04N-R03E-32	38.1496564, -121.66330101

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
SAC-BR-3 Well Pad/Access Road	3	15701200010000	MDM-T04N-R03E-32	38.14648773, -121.66483642
SAC-BR-4 Well Pad/Access Road	3	15701200070000	MDM-T03N-R03E-5	38.13631203, -121.66338663
SAC-BR-5 Well Pad/Access Road	4	15701200320000	MDM-T03N-R03E-5	38.13333177, -121.67343667
SAC-BR-6 Well Pad/Access Road	1	15701200270000	MDM-T03N-R03E-4	38.12694518, -121.64950207
SAC-SH-1 Well Pad/Access Road	3	15800100300000	MDM-T03N-R02E-24	38.09043383, -121.69967126
SAC-TW-1 Well Pad/Access Road	4	15701300240000	MDM-T03N-R03E-8	38.11174535, -121.67221309
SAC-TW-2 Well Pad/Access Road	6	15701300240000	MDM-T03N-R03E-17	38.10039418, -121.67285752
SAC-TW-3 Well Pad/Access Road	4	15701300080000	MDM-T03N-R03E-17	38.10061496, -121.66440932
Big Brannan Pipeline	N/A	15701200010000, 15701200090000, 15701200070000	MDM-T03N-R03E-5, MDM-T04N-R03E-32	38.1406144790456, -121.66689865
Pipeline SAC-BR-1	N/A	15700900610000, 15700900170000, 15700900180000, 15700900880000	MDM-T04N-R03E-28, MDM-T04N-R03E-33	38.15625416, -121.6539721

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
Pipeline SAC-BR-3	N/A	15700900250000, 15701200010000	MDM-T04N-R03E-32	38.14822593, -121.663368
Big Brannan to TB Chiller Pipeline	N/A	15701200010000, 15701200230000	MDM-T04N-R03E-32, MDM-T04N-R03E-33	38.14257407, -121.65748185
Pipeline SAC-BR-4	N/A	15701200070000	MDM-T03N-R03E-5	38.13713506, -121.66384393
Pipeline SAC-BR-6 (1)	N/A	15701200270000, 15701200070000	MDM-T03N-R03E-4	38.12847155, -121.65486992
Pipeline SAC-BR-6 (2)	N/A	15701200270000	MDM-T03N-R03E-4	38.12886912, -121.64813203
Pipeline SAC-SH-1	N/A	15800100300000	MDM-T03N-R02E-24	38.08864429, -121.70332132
Pipeline SAC-TW-1	N/A	15701300240000, 15701300080000, 15701300060000, 15701400200000	MDM-T03N-R03E-16, MDM-T03N-R03E-17, MDM-T03N-R03E-8, MDM-T03N-R03E-9	38.10971657, -121.65916682
Pipeline SAC-TW-2	N/A	15701300240000	MDM-T03N-R03E-17, MDM-T03N-R03E-8	38.10633095, -121.67270519
Pipeline SAC-TW-3	N/A	15701300240000, 15701300080000	MDM-T03N-R03E-17	38.10177796, -121.66863665

2.1.3 Contra Costa County

The Project includes the drilling of 12 wells from a single well pad located on private land on Bradford Island in Contra Costa County, along with construction of an associated pipeline. The pipeline would run from the proposed well pad in Contra Costa County, intersect the San Joaquin River, and extend onto Sherman Island in Sacramento County. Pipeline installation at the river crossing would include the use of an existing underground conduit underneath the San Joaquin River. This underground conduit includes a 10-inch diameter casing which was installed in 2008 utilizing horizontal boring beneath the river, prior to CRPC's acquisition of their Rio Vista gas wells. The average depth of the conduit, which is under the authority of the California State Lands Commission, is 4.3 ft. In addition to the depth of installation, protective measures are in place to prevent external disturbance of the riverbed in the vicinity of the conduit. Signage is installed at the crossing location clearly indicating that activities such as

dredging, anchoring, or other forms of subsurface disturbance are prohibited. These measures further ensure that the integrity of the riverbed and the separation between the conduit and surface waters are maintained.

Table 2.1-3 summarizes the location information for the proposed natural gas wells, well pads/access roads, and pipelines in Contra Costa County.

Table 2.1-3. Proposed Natural Gas Wells, Well Pads/Access Roads, and Pipeline Locations in Contra Costa County

Project Component	No. of Wells	Assessor's Parcel Number (APN)	Township, Range, Section	Latitude/Longitude (Approximate Center of Well Pad)
CC-1 Well Pad/Access Road	12	026030005, 026030014	MDM-T03N-R03E-29	38.07833074, -121.66055798
Pipeline CC-1	N/A	026030005, 026030014, 026030004, 026020002, 026020006 Sacramento: 15800200320000, 15800200310000, 15800200340000, 15800200100000	MDM-T03N-R02E-24, MDM-T03N-R03E-19, MDM-T03N-R03E-29, MDM-T03N-R03E-30	38.08164164, -121.68255154

2.1.4 Senate Bill 1137

On June 28, 2024, a Notice to Operators (NTO) was published by CalGEM for "Regulatory Requirements for Operator Compliance with Senate Bill 1137." This notice was to inform operators that the requirements established by Senate Bill (SB) 1137 (Gonzales, Chapter 365, Statutes of 2022) are no longer stayed and are currently in effect.

SB 1137 or California Public Resources Code (PRC) Section 3280 prohibits certain oil and gas related activities and development in Health Protection Zones (HPZs), or within 3,200 feet of a sensitive receptor, except for purposes of public health and safety. The bill requires operators of existing oil and gas wells or infrastructure within an HPZ to undertake specified monitoring, public notice,

and nuisance requirements. The bill requires California Air Resources Board (CARB) to consult and concur with CalGEM on leak detection and repair plans for these facilities, adopt regulations as necessary to implement emission detection system standards, and collaborate with CalGEM on public access to emissions detection data (California Public Resources Code, 2024).

For each Notice of Intention (NOI) submitted, CalGEM will evaluate whether the proposed well is located within an HPZ based on CRPC's site plans and spatial analysis. Project activities will be compliant with the emergency orders/NTO and all applicable SB 1137 regulations, including Statements and Maps for Notice, which will be included with the respective NOIs for the Project. Under PRC section 3281, CalGEM is prohibited from approving any NOI submitted for a well located within an HPZ unless a statutory exception applies.

2.2 EXISTING FACILITIES AND INFRASTRUCTURE

CRPC operates and maintains 86 active and 216 idle natural gas wells, as well as an existing gas pipeline network, within the Rio Vista Gas Field. The Project would include tie-ins to the existing gas pipeline system for all new proposed pipelines as well as pipeline remediation for portions of the existing network to accommodate the new gas wells, as needed. This would apply to any pipeline within the network based on mechanical integrity testing prior to new well completion hookup. Pipeline remediation would include the abandonment and replacement of up to three existing pipelines (Pipeline SOL-1, Pipeline SOL-3, Pipeline CC-1) may be replaced if they do not meet the minimum high-pressure rating when tested. Abandoned pipelines would be filled with water, capped, and left in place. See Section 2.3.2, Pipeline Installation and Remediation, for additional information regarding potential pipeline replacement activities.

Eleven of the seventeen proposed well pads and their associated access roads would be installed on existing developed well or equipment pads currently supporting CRPC idle gas wells and equipment; this includes four existing well pads in Solano County, six existing well pads in Sacramento County, and one existing well pad in Contra Costa County. However, all existing well pad boundaries would need to be expanded and/or built up, as necessary, to accommodate Project drilling activities and long-term operations (see Section 2.3, Project Footprint, for details on proposed expansions and disturbance areas).

Six proposed well pads would be located in undeveloped areas of the Project site and would require construction of new well pads and associated access roads to support the drilling and operational phases of the Project. These components include SOL-3 Well Pad/Access Road, SOL-5 Well Pad/Access Road, SAC-BR-2 Well Pad/Access Road, SAC-SH-1 Well Pad/Access Road, SAC-TW-1 Well Pad/Access Road, and SAC-TW-3 Well Pad/Access Road. Appendix A

includes a Well Pad Mapbook, which provides maps of the Project area and identifies existing surface well locations and proposed well pad/access road components, including those on existing infrastructure.

Various paved and unpaved access roads are present throughout the Project area and will be utilized as feasible during Project activities. Some access roads associated with new well pads, which are included within the Project footprint as "Well Pad/Access Road" components, would also need to be established during well site preparation. Vegetation clearing to a width of approximately 16 feet on existing access roadways may be required and would be performed as part of routine maintenance prior to Project implementation. Vegetation clearing maintenance activities would avoid any jurisdictional wetlands (refer to Section 5.4, Biological Resources, for further details).

Detailed methods for new pipeline installation/tie-in and pipeline remediation, expansion of existing facilities and infrastructure, and establishment of new well pads and access roads are provided in Section 2.5 below.

2.3 PROJECT FOOTPRINT

2.3.1 Well Pad/Access Road Components

The Rio Vista Gas Field is mainly comprised of undeveloped agricultural fields and wetlands, with some existing access roads, developed well/equipment pads, and pipeline corridors interspersed throughout the area. The total acreage of the Rio Vista Gas Field is 48,647 acres (Figure 1-1). Based on Geographic Information System (GIS) analysis of current aerial imagery of the gas field, there are approximately 880 acres of existing disturbed area related to gas field development (i.e., existing developed well/equipment pads and associated unpaved/paved access roads). Eleven of the seventeen proposed well pad/access road components would be installed on existing, developed well pads that currently support CRPC idle gas wells/equipment, although the well pad/access road dimensions will need to be expanded and/or built up to accommodate Project drilling activities and operations as applicable. The remaining six proposed well pad/access road components are located in undeveloped areas of the Project site. Collectively, the well pad/access road components would result in approximately 25.4 acres of permanent land disturbance. Approximately 10.6 acres of this permanent disturbance would result from expansion of existing well pads/access roads, while the remaining approximately 14.8 acres would result from construction of new well pads/access roads in undeveloped areas.

Construction of the well pads and associated access roads in undeveloped locations would require clearing of vegetation and grading an area to accommodate the temporary drilling equipment and final gas wells and

equipment/facilities (e.g., gas well units, tanks, tie-in pipelines). A description of existing vegetation present in these areas is included in Section 3.0, Environmental Setting, and Section 5.4, Biological Resources. Construction of well pad/access road components on existing well pads would also require clearing and grading of the undeveloped areas surrounding the existing development to accommodate the revised well pad configuration (refer to Section 2.3.3 for details). No interference with existing active well operations would be required.

The size of each well pad is dependent upon the size of the drilling rig footprint, the number of wells anticipated to be drilled on the pad, and the type of operational support equipment that would be placed on the well pad for production operations. The footprint of each existing well pad is shown in Table 2.1-1 through -3. In turn, the drilling support equipment is dependent upon the depth of the well and the type of activities required for production. The area needed to accommodate temporary drilling equipment for this Project would be approximately 255 feet by 120 feet (30,600 square feet) for each well; however, drilling equipment can be positioned in various arrangements and the drilling work area for most wells would overlap to stay within the specific boundaries and size designated for each Project well pad. Drilling work areas would not affect any environmental features outside of the proposed Project footprint.

Project well pad boundaries were developed to accommodate the temporary drilling equipment and the number of wells to be drilled per pad, while minimizing the size of the Project footprint to the greatest extent feasible. All associated equipment and facilities (e.g., tanks, compressors) for the Project would fit within the proposed well pad boundaries; therefore, no additional pads are necessary to accommodate associated equipment or facilities.

2.3.2 Pipeline Installation and Remediation

The Project would also include installation of 17 new pipelines to accommodate the new gas wells, one 12-inch diameter pipeline in Sacramento County (the Big Brannan Pipeline) and 16 4-inch or 6-inch diameter pipelines: five in Solano County, 10 in Sacramento County, and one in Contra Costa County (Figure 2-1). Refer to Tables 2.1-1 through 3 for the approximate lengths of each pipeline. Pipelines would be buried along the proposed corridors with a trenching disturbance width of 24 inches for 4-inch or 6-inch pipelines and 36 inches for the 12-inch pipeline. The temporary work area for pipeline installation activities would be approximately 30 feet wide along each pipeline corridor, which would include above-ground vegetation removal and equipment/foot traffic and temporary soil stockpiling areas (refer to Section 5.4, Biological Resources for further details). The CC-1 pipeline would run from the proposed CC-1 well pad/access road in Contra Costa County, intersect the San Joaquin River, and

extend onto Sherman Island in Sacramento County. Pipeline installation at the river crossing would include the use of an existing underground conduit underneath the San Joaquin River; therefore, the estimated Project footprint for this pipeline was calculated using the pipeline corridor length on either side of the river. Installation of the new CC-1 Pipeline through the existing conduit would require notification to and coordination with the California State Lands Commission; however, no new permits are expected to be required.

Pipeline remediation would include the replacement of up to three existing pipelines (approximately 2,752 feet of four-inch diameter pipelines, 17,536 feet of six-inch diameter pipelines) if they do not meet the minimum high-pressure rating when tested (several classes up to 1500psi maximum allowable working pressure). The existing pipelines would be abandoned in place (i.e., filled with water, capped, and left in place) and the new pipelines would be installed along the existing pipeline corridor. The new pipelines that would replace existing pipelines include Pipeline SOL-1 (four-inch diameter), Pipeline SOL-3 (six-inch diameter), and Pipeline CC-1 (six-inch diameter.) Pipeline remediation activities would also require a 30-foot-wide work area along the existing pipeline corridors for remediation activities.

2.3.3 Project Footprint and Disturbance Area

The Project footprint is defined as the space that will be utilized for both Project development and operation activities (i.e., size of drilling work areas, final well pads, pipeline work corridors, and/or access roads). The disturbance area is defined as undeveloped, vegetated habitat/agricultural land that overlaps with the Project footprint and would be permanently impacted by Project activities through permanent land use conversion.

The following well pad/access road features are located on existing well/equipment pads: SOL-1, SOL-2, SOL-4, SOL-6, SAC-BR-1, SAC-BR-3, SAC-BR-4, SAC-BR-5, SAC-BR-6, SAC-TW-2, and CC-1; therefore, the disturbance area for these components only includes the area of expansion into undeveloped areas from the existing developed well pad boundary and is less than the Project footprint. The total developed area for these existing well/equipment pads is approximately 10.8 acres. The Project footprint for the new proposed well pad/access road components is approximately 36.2 acres, which includes approximately 25.4 acres of new permanent disturbance resulting from permanent land use conversion.

New pipeline installation and pipeline remediation work would not include permanent conversion of land use and would only include temporary impacts from trenching and the associated temporary work area. Following pipeline installation, topsoil would be replaced over temporary disturbance areas and vegetation would be allowed to regrow (refer to Section 5.4.3 for more details).

The Project footprint for pipeline components would include approximately 104.3 acres of temporary disturbance.

Within the entire 141-acre Project footprint, the Project would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance for pipeline installation and permanent conversion of approximately 25.4 acres of permanent disturbance associated with the conversion of vegetated habitat or agricultural land for well pad/access road components. The estimated Project footprint and disturbance area for each Project component are included in Table 2.3-1 below. Appendix A includes detailed maps showing the Project footprint of each well pad/access road and associated pipeline routes.

Table 2.3-1. Estimated Project Footprint and Disturbance Area

County	Project Component	No. of Wells or Pipeline Length (Linear Feet)	Project Footprint (Acres)	Existing Well Pad Footprint (Existing Disturbance) (as applicable)	Net Disturbance Area/Permanent Conversion of Land Use (Acres)
Solano	SOL-1 Well Pad/Access Road	3	2.2	2.0	0.2
Solano	SOL-2 Well Pad/Access Road	2	1.79	0.12	1.67
Solano	SOL-3 Well Pad/Access Road	17	4.96	N/A	4.96
Solano	SOL-4 Well Pad/Access Road	5	2.7	0.3	2.4
Solano	SOL-5 Well Pad/Access Road	6	2.37	N/A	2.37
Solano	SOL-6 Well Pad/Access Road	6	2.41	0.46	1.95
Solano	Pipeline SOL-1	2,752	3.86	N/A	0
Solano	Pipeline SOL-3	2,751	3.85	N/A	0
Solano	Pipeline SOL-4/5	4,627	6.42	N/A	0

County	Project Component	No. of Wells or Pipeline Length (Linear Feet)	Project Footprint (Acres)	Existing Well Pad Footprint (Existing Disturbance) (as applicable)	Net Disturbance Area/Permanent Conversion of Land Use (Acres)
Solano	Pipeline SOL-5/6	1,938	2.72	N/A	0
Solano	Pipeline SOL-6	5,378	7.45	N/A	0
Sacramento	SAC-BR-1 Well Pad/Access Road	1	1.27	0.67	0.6
Sacramento	SAC-BR-2 Well Pad/Access Road	3	1.74	N/A	1.74
Sacramento	SAC-BR-3 Well Pad/Access Road	3	2.02	0.99	1.03
Sacramento	SAC-BR-4 Well Pad/Access Road	3	1.51	0.87	0.64
Sacramento	SAC-BR-5 Well Pad/Access Road	4	1.56	0.61	0.95
Sacramento	SAC-BR-6 Well Pad/Access Road	1	1.19	0.87	0.32
Sacramento	SAC-SH-1 Well Pad/Access Road	3	2.2	N/A	2.2
Sacramento	SAC-TW-1 Well Pad/Access Road	4	1.65	N/A	1.65
Sacramento	SAC-TW-2 Well Pad/Access Road	6	2.41	1.59	0.82
Sacramento	SAC-TW-3 Well Pad/Access Road	4	1.89	N/A	1.89

County	Project Component	No. of Wells or Pipeline Length (Linear Feet)	Project Footprint (Acres)	Existing Well Pad Footprint (Existing Disturbance) (as applicable)	Net Disturbance Area/Permanent Conversion of Land Use (Acres)
Sacramento	Big Brannan Pipeline	5,609	7.78	N/A	0
Sacramento	Pipeline SAC-BR-1	4,863	6.76	N/A	0
Sacramento	Pipeline SAC-BR-3	1,472	2.08	N/A	0
Sacramento	Big Brannan to TB Chiller Pipeline	8,033	11.12	N/A	0
Sacramento	Pipeline SAC-BR-4	457	0.69	N/A	0
Sacramento	Pipeline SAC-BR-6 (1)	3,087	4.32	N/A	0
Sacramento	Pipeline SAC-BR-6 (2)	1,382	1.97	N/A	0
Sacramento	Pipeline SAC-SH-1	2,781	3.89	N/A	0
Sacramento	Pipeline SAC-TW-1	9,894	13.68	N/A	0
Sacramento	Pipeline SAC-TW-2	4,458	6.19	N/A	0
Sacramento	Pipeline SAC-TW-3	2,832	3.96	N/A	0
Contra Costa	CC-1 Well Pad/Access Road	12	2.36	2.32	0.04
Contra Costa	Pipeline CC-1	14,784	17.6	N/A	0
All Counties	**TOTAL (All Project Components)**	**83 Wells and 77,098 Linear Feet of Pipeline**	**140.6**	**10.6**	**25.4**

2.3.4 Alternative Well Pads

CRPC is currently in the process of securing the necessary land agreements for Project implementation. The proposed Project well pad, access road, and pipeline components described above represent the most likely scenario for Project implementation. However, to accommodate potential changes in pending land agreements, CRPC has identified several alternative well pad, access road, and pipeline locations that may be used in part or in full. CRPC has proposed six alternative well pad/access road locations and two alternative pipeline. These alternative components include:

- SOL-2 Alternative Well Pad/Access Road
- SOL-1/SOL-2 Combined Alternative Access Road
- SOL-2.1 Alternative Well Pad/Access Road
- SOL-3 Alternative Well Pad/Access Road
- SOL-4 Alternative Well Pad/Access Road
- SAC-TW-3.1 Alternative Well Pad/Access Road
- Alternative SOL-1 Pipeline
- Alternative Flannery 4-inch Pipeline (Option 2)

The estimated disturbance areas associated with the alternative well pad/access road and pipeline components are provided in Table 2.3-2. The abbreviation "Alt." used in Table 2.3-2 corresponds to the "Alternative" designation used in Figure 2-2. Alternative Project components are shown in Figure 2-2.

Table 2.3-2 Disturbance Areas of Alternative Project Components

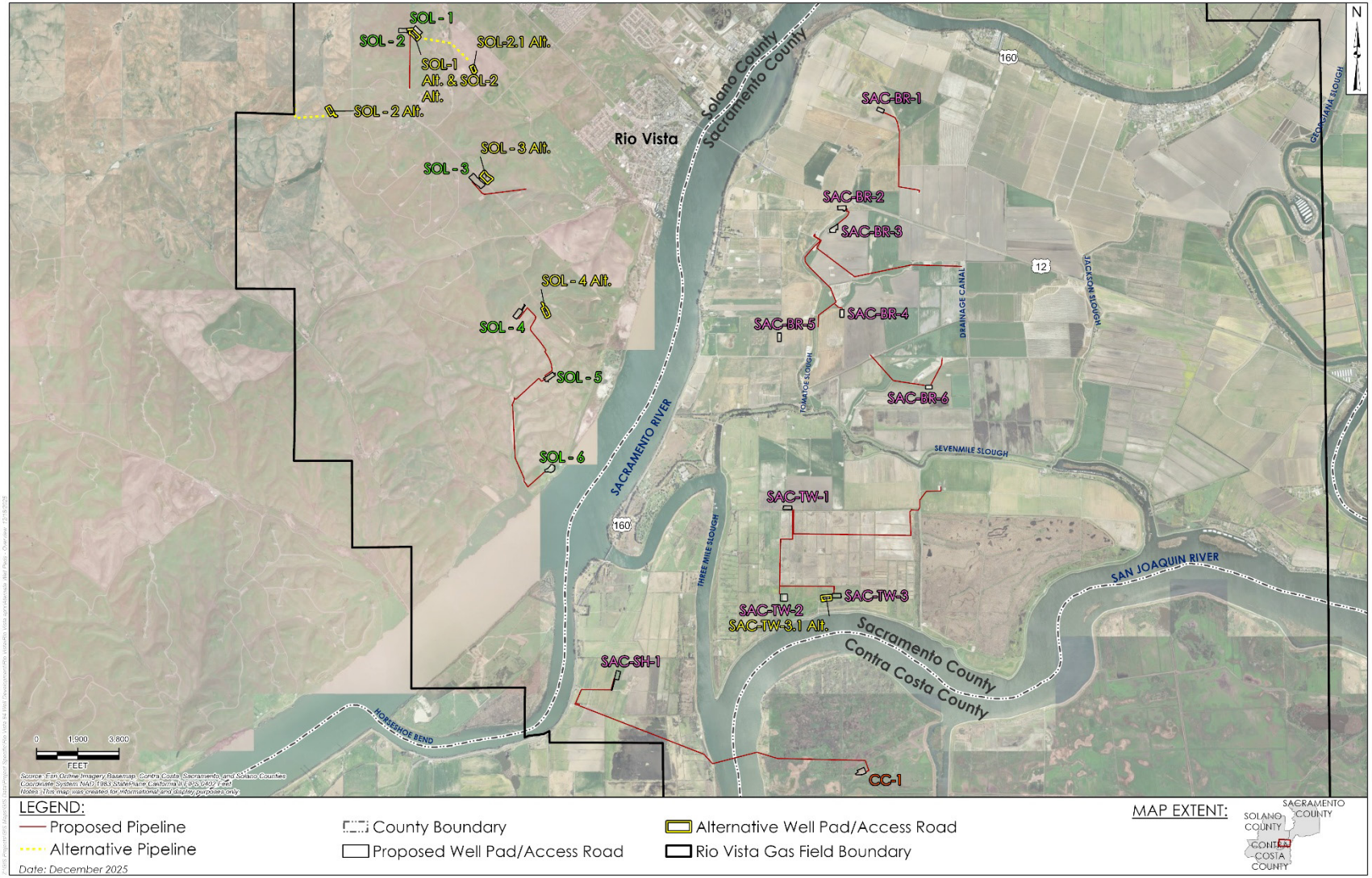
County	Project Component	No. of Wells or Pipeline Length (Linear Feet)	Project Footprint (Acres)	Existing Well Pad Footprint (Acres)	Net Disturbance Area/Permanent Conversion (Acres)
Sacramento	Option 2: New 4-inch Line on Flannery Land	2,703	3.73	N/A	3.73
Sacramento	4" Royale Wells	2,536	3.49	N/A	3.49

County	Project Component	No. of Wells or Pipeline Length (Linear Feet)	Project Footprint (Acres)	Existing Well Pad Footprint (Acres)	Net Disturbance Area/Permanent Conversion (Acres)
Sacramento	TW-3.1 Alt.	2	1.95	1.95	0
Solano	SOL-1 Alt. & SOL-2 Alt.	5	2.33	0	2.33
Solano	SOL-2 Alt.	2	1.93	0	1.93
Solano	SOL-2.1 Alt.	3*	1.22	0.82	0.40
Solano	SOL-3 Alt.	9	3.58	0	3.58
Solano	SOL-4 Alt.	4	2.32	0.78	1.54

Note: *Up to three wells may be moved from SOL 3 to SOL 2.1 Alt. based on drilling engineering analysis.

Regardless of CRPC's final decision to use original and/or alternative Project component locations, the total number of wells drilled as part of the Project would remain 83 (refer Appendix A for list of well names and associated well pads and alternative well pads). This IS/MND evaluates the potential impacts associated with both the proposed and alternative Project components. The use of alternative locations would not increase the overall scope of the Project, the number of wells, or the maximum Project footprint and disturbance area evaluated in this IS/MND. If some or all alternative well pad/access road components are used, the total Project footprint and disturbance area would remain within the maximums evaluated for the Project which are up to approximately 151 acres of Project footprint and 34 acres of disturbance area, respectively.

Figure 2-2. Alternative Well Pads



2.4 PROJECT CONSTRUCTION – WELL DRILLING PROGRAM

Project construction activities would be divided into three primary components: well site preparation, drilling operations, and well completion activities.

2.4.1 Well Site Preparation

Following any required pre-activity surveys, construction for the Project well pad/access road components would begin with clearing and grading (as necessary) areas to accommodate the temporary drilling equipment and final production facilities (i.e., gas well units, operational support equipment, tie-in pipelines, and electrical lines). Establishment of pipeline installation (new and replacement) work areas would include above-ground herbaceous vegetation removal within an approximately 30-foot-wide corridor along the proposed pipeline routes to make a work corridor for pipeline trenching and installation activities. No grading would be required for pipeline corridor preparation. No tree removal would be necessary for well site preparation. Well site and pipeline corridor preparation activities would require the use of typical earthmoving equipment (i.e., backhoe, grader, dozers, and/or loaders), light trucks, and a water truck. Groundwork would last for a duration of approximately four days per well pad/access road and approximately one day per 1,000 feet of pipeline corridor for above-ground vegetation removal, for a total of approximately 145 days.

Vegetation clearing and grading activities for establishment of well pads/ access roads and pipeline corridors would be limited to the proposed Project footprint (**DF BIO-1**; refer to Section 2.3 and Table 2.3-1 for Project footprint details). Cut and fill would be balanced onsite. Once established, well pads and access roads would be compacted and approximately six inches of gravel would be placed following compaction to facilitate drainage and stability during Project operations (refer to Table 2.4-1 for gravel import information for each well pad/access road component). Gravel will be obtained from Butte Sand and Gravel located approximately 85 miles north of the Project area.

Table 2.4-1. Gravel Import Associated with Well Pad/Access Roads

Well Pad/Access Road	Area (Sq Ft)	Gravel Import (Cubic Feet)	Gravel Import (Cubic Yards)	# of Haul Trips (22 cy per trip)
SOL-1 Well Pad/Access Road	95,788	47,894.0	1773.85	81
SOL-2 Well Pad/Access Road	77,816	38,907.9	1441.03	66

Well Pad/Access Road	Area (Sq Ft)	Gravel Import (Cubic Feet)	Gravel Import (Cubic Yards)	# of Haul Trips (22 cy per trip)
SOL-3 Well Pad/Access Road	216,209	108,104.5	4003.87	182
SOL-4 Well Pad/Access Road	117,633	58,816.6	2,178.4	99
SOL-5 Well Pad/Access Road	103,177	51,588.5	1,910.7	87
SOL-6 Well Pad/Access Road	104,991	52,495.6	1,944.3	88
SAC-BR-1 Well Pad/Access Road	55,213	27,606.3	1,022.5	46
SAC-BR-2 Well Pad/Access Road	75,650	37,825.0	1,400.9	64
SAC-BR-3 Well Pad/Access Road	88,125	44,062.4	1,631.9	74
SAC-BR-4 Well Pad/Access Road	65,559	32,779.3	1,214.1	55
SAC-BR-5 Well Pad/Access Road	67,795	33,897.4	1,255.5	57
SAC-BR-6 Well Pad/Access Road	51,788	25,894.1	959.0	44
SAC-SH-1 Well Pad/Access Road	97,442	48,721.1	1,804.5	82

Well Pad/Access Road	Area (Sq Ft)	Gravel Import (Cubic Feet)	Gravel Import (Cubic Yards)	# of Haul Trips (22 cy per trip)
SAC-TW-1 Well Pad/Access Road	72,047	36,023.5	1,334.2	61
SAC-TW-2 Well Pad/Access Road	108,291	54,145.4	2,005.4	91
SAC-TW-3 Well Pad/Access Road	82,460	41,230.1	1,527.0	69
CC-1 Well Pad/Access Road	102,747	51,373.7	1,902.7	86
	Total:	**791,365.5**	**29,309.8**	**1,332**

2.4.2 Drilling Operations

After the well pads and access roads are installed, the drill rig would be moved onto the well pad(s) and set up. Temporary facilities, equipment, and materials necessary for drilling operations would also be set up at this time including drilling mud supplies, water, drilling materials and casing, crew support trailers, pumps and piping, portable generators, fuels and lubricants).

Drilling activities are anticipated to utilize an Ensign ADR 300/350 (or equivalent) drill rig. An example drill site plan/drill rig layout is provided in Appendix B. Drilling activities would take approximately 15 days per well, with four to five days of that time associated with drilling, for a total of 1,245 days (about 41 months) to complete. Drilling would be conducted on a continuous basis (24 hours per day) until the required depth is achieved. During this time, night-lighting would be required at the well pad and on the drill rig. Light-emitting diode (LED) mobile light plants will be utilized for safety and security during drilling activities. Temporary night-time lighting for Project construction activities would be shielded and directed downward and would be turned off when sufficient daytime light is present **(DF AES-1)**.

Typical equipment utilized would include the drilling rig, fluid handling equipment, water tank, fuel tank, mud handling system, mud pumps, mud logging unit, diesel generators, power distribution skid, blow-out prevention equipment, spill prevention equipment, pipe trailer, pipe rack, forklift, cuttings bin, catwalk, and change house/tool house trailer. The anticipated drilling fluids

would be a low solids, non-dispersed (LSND) system, with a mud weight of 8.6-9.0 pounds per gallon (ppg) for the 12.25-inch section and a weight of 9.5-10.0 ppg for the 8.75-inch section of drill pipe.

An example gas well drilling procedure for the Project includes the following steps:

Conductor Installation:

- **Install well cellar**. Drill rathole and mousehole for drilling rig. Drill 24-inch hole with bucket drill bit to 80 feet below ground level.
- **Set Conductor**. Set 16-inch conductor pipe on bottom and cement to surface.
- **Inspection.** Inspect site in preparation for drilling.

Drilling Procedure:

- **Mobilize Drill Rig**. Mobilize in and rig up drill rig.
- **Install Blowout Prevention Equipment (BOPE)**. Install annular preventer and 6-inch diverter line for BOPE while drilling the surface hole section.
- **Drilling**. Directionally drill the 12.25-inch surface hole to 1,000 feet.
- **Cementing**. Run 9.625-inch casing and cement well to surface casing.
- **Install Wellhead.** Install wellhead on well.
- **BOPE Test.** Rig up BOPE and test per CalGEM guidelines. CalGEM to witness.
- **Drill 8.75-inch Section**. Mobilize 8.75-inch bottom hole assembly and drill vertically to ~6,873 feet total depth (TD).
- **Cement**. Run 5.5-inch casing and cement well to surface production casing.
- **Pressure Testing and Instrumentation.** Remove BOPE and install production tree.
- **Rig Down and Demobilize (Move Out) – RDMO/Well is Ready for Production.** RDMO and place well on production.

Casing and cementing are completed per CalGEM regulations and in accordance with Title 14 California Code of Regulations (CCR), Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1722, 1722.2, 1722.3, 1722.4, 1722.5 and 1722.6.

2.4.2.1 Water Usage During Drilling Activities

A water truck will be utilized to supply the required water during well drilling activities. Water would be purchased from the Calpine facility (a municipal water source) in the City of Rio Vista. Approximately 2,800 barrels (Bbl) of water

per well will be required for drilling (232,400 Bbl total), which translates to approximately 20 water truck trips per well that will be required (approximate truck capacity is 140 Bbl per truck).

2.4.2.2 Drilling Waste Disposal

Drilling waste generated during Project activities is anticipated to be non-hazardous. This determination is based on the anticipated composition of the materials to be encountered (primarily native soils and sediments) and their evaluation under applicable hazardous waste criteria established by the California Department of Toxic Substances Control (DTSC). Specifically, soils and drilling cuttings would be evaluated in accordance with California hazardous waste regulations (Title 22, CCR), including applicable thresholds for characteristics such as toxicity, ignitability, corrosivity, and reactivity. If required, representative samples of drilling waste would be collected and analyzed using standard analytical methods (e.g., Total Threshold Limit Concentration [TTLC] and Soluble Threshold Limit Concentration [STLC]) to confirm that the material does not exceed DTSC hazardous waste criteria. Based on the expected geologic materials and absence of known contamination sources at the project site, drilling wastes are anticipated to meet the definition of non-hazardous waste. In the event that testing indicates that any material exceeds applicable DTSC thresholds, it would be managed, transported, and disposed of in accordance with all federal, state, and local hazardous waste regulations.

It is anticipated that approximately 1,600 Bbl of drill cuttings will be generated per well (for a Project total of 132,800 Bbl). All drilling waste, including drill cuttings, will be managed within a closed-loop system and stored in tanks before the waste is hauled away for disposal. Solid drilling waste would be transported in covered bins to a regional landfill (such as Potrero Hills Landfill in Solano County, approximately 30 miles from the Project area; or Sacramento County (Kiefer) Landfill, approximately 50 miles from the Project area). Approximately 16 trips of drilling waste per well will be required to transport drilling waste. The remaining capacity of the Potrero Hills Landfill is approximately 13,872,000 cy. The remaining capacity of the Sacramento County Landfill is approximately 102,300,000 cy.

2.4.3 Well Completion Activities

Well completion activities would include the completion of the gas formations and installation of production facilities and operational support equipment on the new well pads, including well heads, water tanks, and compressors, as well as new pipeline tie-ins to the existing infrastructure. New compressors and operational support equipment would run on field-produced gas and would not require additional electrical upgrades or generators.

Specifically, after drilling is complete and the well has been drilled to its total depth (TD), a completions rig would add perforations to the well in the desired

formation in order to produce the well. A well test is then performed to measure the rate of production to determine if the well is performing to the anticipated standard. This information is also used to determine the character and extent of the reservoir. Initial well testing and completion activities may involve limited flaring and associated emissions in compliance with applicable Air Pollution Control District (APCD)/Air Quality Management District (AQMD) and EPA requirements. After viability is confirmed, final piping and instrumentation and safety valves are added.

2.4.4 Pipeline Installation and Remediation

Temporary work areas for pipeline installation work would first be established by completing above-ground vegetation removal, as necessary, within an approximately 30-foot-wide work corridor along the proposed pipeline routes to facilitate trenching and installation activities. No grading would be required for vegetation removal activities. A trench for the pipeline would then be excavated, and the pipeline will be subsequently installed and buried approximately 36 inches below ground surface. Deeper burial may be necessary for trenching and pipeline installation in agricultural areas, wetlands or flood-prone areas, and/or along/across access roads. For example, ten of the pipelines (approximately 58,209 linear feet) would overlap with wetlands. Trench width would be two feet for 4-inch or 6-inch diameter pipelines and three feet for 12-inch diameter pipelines. Groundwork for pipeline installation activities would require the use of typical earthmoving equipment (e.g., backhoe, grader, and/or loaders), light trucks, and a water truck. Pipeline installation would take approximately one day per 500 linear feet of pipeline with one work crew. Pipeline installation at the San Joaquin River crossing for the Contra Costa pipeline would include the use of an existing underground conduit underneath the river.

Remediation of the existing pipeline network would include the replacement of up to three existing pipelines (up to a length of 20,287 feet total) if they do not meet the minimum high-pressure rating when tested. The existing pipelines would be abandoned in place (i.e., filled with water, capped, and left in place) and the new replacement pipelines would then be trenched in and installed along the existing pipeline corridor, using the same methods described above for new pipeline installation. The new pipelines that would replace existing pipelines include Pipeline SOL-1, Pipeline SOL-3, and Pipeline CC-1.

2.4.5 Project Construction Duration

The Project would be constructed over approximately 6.8 years. The estimated well development schedule is outlined in Table 2.4-2. The number of wells drilled and developed per county is not expected to exceed the number of workdays listed in Table 2.4-2. The duration of Project construction activities in each county may vary due to unforeseen delays or adverse weather conditions. The

calculated annual by county emissions would be below the respective thresholds set forth by the Yolo-Solano Air Quality Management District (YSAQMD), which covers Project wells located in Solano County; the Sacramento Metropolitan (SMAQMD), which covers Project wells located in Sacramento County; and the Bay Area Air Quality Management District (BAAQMD), which covers Project wells located in Contra Costa County.

The estimated emissions produced during Project construction activities are conservatively based on continuous and sequential well site/access road preparation, drilling activities, installation of associated equipment and facilities, and pipeline installation/tie-in and remediation activities, for approximately 365 days per year. These activities are not expected to overlap.

Table 2.4-2. Estimated Well Development Schedule

	Contra Costa	Sacramento	Solano	TOTAL
Total Days	318	858	981	**2,157**
No. of Wells	12	32	39	**83**
Approximate Years	1.0	2.7	3.1	**6.8**

2.4.5 Equipment and Personnel Requirements

2.4.5.1 Equipment

The proposed rig to perform well drilling activities is anticipated to be a diesel powered 800 horsepower US EPA Tier 4 rated drilling rig. Tables 2.4-3 and 2.4-4 provide a summary of primary onsite equipment requirements and passenger trips during each phase of the Project.

Refer to the equipment lists included in the air quality spreadsheets included in Appendix C for additional details, including engine specifications and horsepower.

Table 2.4-3. Onsite Equipment Requirements All Counties (Per Well)

Work Task/Phase	Equipment Type	Quantity	Horsepower	Operating Hours/Day	Days of Operation
Well Site Preparation	Backhoe (420)	1	79	8	1
Well Site Preparation	Excavator	1	188	8	1
Well Site Preparation	Loader	1	221	8	4

Work Task/Phase	Equipment Type	Quantity	Horsepower	Operating Hours/Day	Days of Operation
Well Site Preparation	Grader	1	138	8	1
Well Site Preparation	Water Truck	1	360	8	4
Drilling Operations	Drilling Rig	1	800	22	15
Drilling Operations	Forklift	1	174	4	15
Drilling Operations	Generator	3	450	23	15
Drilling Operations	Vacuum Truck	4	475	6	15
Well Completion Activities	Backhoe (420)	1	79	8	5
Well Completion Activities	Crane	1	475	8	5
Well Completion Activities	Excavator	1	188	8	2
Well Completion Activities	Loader	1	221	8	2
Well Completion Activities	Completion Rig	1	450	12	1
Pipeline Installation and Remediation	Backhoe (420)	1	79	8	30*/90**/45†
Pipeline Installation and Remediation	Excavator	1	188	8	30*/90**/45†
Pipeline Installation and Remediation	Loader	1	221	8	30*/90**/45†
Pipeline Installation	Grader	1	138	8	30*/90**/45†

Work Task/Phase	Equipment Type	Quantity	Horsepower	Operating Hours/Day	Days of Operation
and Remediation					
Pipeline Installation and Remediation	Water Truck	1	360	8	30*/90**/45†

Notes: * - Contra Costa County. ** - Sacramento County and † - Solano County

Table 2.4-4. Mobile Equipment Sources by County

Table 2.4-4a. Solano County Mobile Equipment Sources

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Well Site Preparation	Passenger Car/Pickup Truck Round Trips	4	12	1,872	39
Well Site Preparation	Heavy Truck/Semi	6	12	2,808	39
Drilling Operations	Passenger Car/Pickup Truck Round Trips	16	12	7,488	39
Drilling Operations	Heavy Truck/Semi	10	12	4,680	39
Drilling Operations	Heavy Truck/Semi	2	12	14,040	585
Well Completion Activities	Passenger Car/Pickup Truck Round Trips	11	12	25,740	195
Well Completion Activities	Heavy Truck/Semi	1	12	2,340	195

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Pipeline Installation and Remediation	Passenger Car/Pickup Truck Round Trips	4	12	528	11
Pipeline Installation and Remediation	Heavy Truck/Semi	6	12	792	11

Notes: Total mileage includes only the distance traveled within Solano County during the corresponding activity.

Table 2.4-4b. Sacramento County Mobile Equipment Sources

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Well Site Preparation	Passenger Car/Pickup Truck Round Trips	4	27	3,456	32
Well Site Preparation	Heavy Truck/Semi	6	27	5,184	32
Drilling Operations	Passenger Car/Pickup Truck Round Trips	16	27	16,848	39
Drilling Operations	Heavy Truck/Semi	10	27	10,530	39
Drilling Operations	Heavy Truck/Semi	2	101	118,170	585
Well Completion Activities	Passenger Car/Pickup Truck Round Trips	11	27	47,520	160

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Well Completion Activities	Heavy Truck/Semi	1	27	4,320	160
Pipeline Installation and Remediation	Passenger Car/Pickup Truck Round Trips	4	27	2,484	23
Pipeline Installation and Remediation	Heavy Truck/Semi	6	27	3,726	23

Notes: Total mileage includes only the distance traveled within Sacramento County during the corresponding activity.

Table 2.4-4c. Contra Costa County Mobile Equipment Sources

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Well Site Preparation	Passenger Car/Pickup Truck Round Trips	4	2	96	12
Well Site Preparation	Heavy Truck/Semi	6	2	144	12
Drilling Operations	Passenger Car/Pickup Truck Round Trips	16	2	384	12
Drilling Operations	Heavy Truck/Semi	10	2	240	12
Drilling Operations	Heavy Truck/Semi	2	2	864	180

Work Task/Phase	Equipment Type	Quantity	Round Trip Distance (Miles)	Total Miles Driven	Duration (Days)
Well Completion Activities	Passenger Car/Pickup Truck Round Trips	11	2	1,320	60
Well Completion Activities	Heavy Truck/Semi	1	2	120	60
Pipeline Installation and Remediation	Passenger Car/Pickup Truck Round Trips	4	2	64	8
Pipeline Installation and Remediation	Heavy Truck/Semi	6	2	96	8

Notes: Total mileage includes only the distance traveled within Contra Costa County during the corresponding activity.

2.4.5.2 Personnel

Existing CRPC personnel will supervise the well drilling activities. The subcontracted construction (drilling) personnel (approximately 13 workers maximum) will travel to the Project area for the duration of construction from Bakersfield, California. Project personnel will utilize local hotel accommodations within an approximate 20-mile radius of the Project area, rotating every 7 days. Project-related use of hotel accommodations would be temporary in nature and is not expected to result in significant socioeconomic impacts, as the Project would utilize existing capacity within established hotels. Approximately 10 personnel (passenger cars/trucks) would be required to travel to and from the Project site each day during construction. During a worst-case day, it is anticipated that up to 25 trips could be required to the Project site including materials deliveries or disposal.

2.5 PROJECT OPERATION

Following completion of construction activities, the wells would be operated under CalGEM requirements by the existing CRPC field crew at the Rio Vista Gas Field. Once installed, naturally flowing gas wells and compressors require minimal maintenance, and operational activities would only involve periodic inspections by existing CRPC personnel. When first online, wells would be visited

daily to optimize production, then weekly to ensure safe production and for condensate tank emptying. Wells would also be monitored remotely using constant monitoring with telemetry that allows for immediate camera viewing and live pressure and condensate tank monitoring to reduce risk of overflow into secondary containment. CARB quarterly leak detection would also be conducted for wells.

Operational activities would generate some greenhouse gas emissions from the combustion of field gas used to operate the twelve compressor units, which are covered under CRPC's Cap-and-Trade obligations. Additional greenhouse gas emissions would result from potential fugitive emissions from wellhead and pipeline components and maintenance vehicles used for periodic inspections; these emissions would be covered under CRPC's Cap-and-Trade obligations.

2.6 BEST MANAGEMENT PRACTICES (BMPS)

Best management practices during construction and operation of the proposed wells will include (but not be limited to) the following:

Construction:

- CRPC Worker Safety and Environmental Awareness Project Training prior to and throughout Project activities **(DF HAZ-1)**. This training would cover biological resources and cultural resources awareness, emergency spill response, dust control measures, and other general construction measures to ensure Project worker safety and protection of sensitive resources at or near the Project site. All Project personnel would complete this training prior to working onsite. CRPC would maintain a physical and digital list of all Project workers who have completed the training and can provide the list to CalGEM upon request.
- Drilling practices that are compliant with the CalGEM requirements for assuring safe drilling and drill casing practices, well design, construction and well management requirements, blowout requirements, and all other provisions of 14 CCR §1744 and other applicable CalGEM regulations. CRPC also reduces the incidence of well control losses by following the practices described in Recommended Practice for Well Control Operations (American Petroleum Institute [API], 2012).
    - Use of a closed-loop system to avoid discharges of drilling muds and fluids. All drilling waste, including drill cuttings, will be managed within the closed-loop system and stored in tanks before the waste is hauled away for disposal. Solid drilling waste would be transported in covered bins to a regional landfill; and
    - Ensuring construction waste is not stored onsite for longer than the duration of the construction activity or transportation of any waste to unpermitted facilities. CRPC will also reduce construction waste transported to landfills to the extent feasible by recycling solid waste construction materials.

Operations:

- Conduct a Process Hazard Review (PHRA) as part of the CRPC Risk Program to identify safety, operability, and environmental hazards associated with operation of facilities. The analyses include the evaluation of prevention and mitigation measures currently practiced by CRPC with respect to minimizing the identified risks and/or hazards; CRPC will submit PHRA documentation to CalGEM and retain the digital copy internally for any future audits.
- Testing, Maintenance and Inspections. Breakout and storage tanks, pipelines, secondary containment structures, and transfer equipment such as pumps and valves are inspected, tested, and maintained in accordance with the applicable regulatory requirements, industry standards, or CRPC internal policies. Routine inspections would be

conducted in accordance with applicable regulatory requirements and the operator's standard operating procedures. Inspections would occur at a regular frequency (bi-monthly or as appropriate) and would be documented in written or electronic inspection logs that record the date of inspection, inspector name, observed conditions, and any corrective actions taken. Inspection records would be maintained by CRPC and would be available for review by applicable regulatory agencies, including the County Fire Department and the Certified Unified Program Agency, upon request.

- Spill/release prevention measures at CRPC facilities include inspection and testing procedures, primary and secondary physical containment, 24-hour per day electronic monitoring, and in-person patrols, all designed to ensure appropriate mechanical conditions and operations of the facility infrastructure; annual training is also conducted for any environmental release (a gas release is more likely than liquid release) for all operators and supervisors, ensuring proper agency and internal notification pathways are understood and followed in the event of a release.
- Access to all CRPC facilities is restricted to authorized personnel only. Main CRPC facilities are fenced or gated with locks and well sites have signage describing natural gas production but may not be fenced or gated; however, access is restricted to the public due to the wells/pipelines being located on privately owned land. While CRPC facilities would be restricted from public access, emergency responders would be permitted access, and the project would comply with applicable County fire access requirements.

2.7 DESIGN FEATURES AND REGULATORY REQUIREMENTS

Table 2.7-1 presents the Project description design features and/or applicable regulatory requirements that contribute to minimizing the potential environmental impacts of the Project. Other regulatory requirements identified throughout this document and the MMRP include regulations, requirements, codes, rules, or other mandatory guidance from a lead or responsible agency. Please see the applicable issue area for full discussion.

Table 2.7-1. Project Design Features and Regulatory Requirements

Design Feature/ Regulatory Requirement	Description	Potential Impact Category
DF AES-1	Temporary night-time lighting for Project construction activities would be shielded and directed downward and would be turned off when sufficient daytime light is present.	Aesthetics
RR AQ-1	CRPC shall comply with California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation pursuant to California Code of Regulations, Title 13, Section 2449.	Air Quality
RR AQ-2	Compliance with Yolo-Solano Air Quality Management District, Regulation 3, Rule 3.5 – Emissions Reduction Credits, as applicable.	Air Quality
RR AQ-3	Compliance with Sacramento Metropolitan Air Quality Management District, Regulation 2, Rule 204 – Emissions Reduction Credits, as applicable.	Air Quality
RR AQ-4	Compliance with Bay Area Air Quality Management District, Regulation 2, Rule 4 – Emissions Banking, as applicable.	Air Quality
DF BIO-1	Vegetation clearing and grading activities would be limited to the proposed Project footprint.	Biological Resources, Geology and Soils
RR BIO-1	If required, CRPC shall obtain a Lake and Streambed Alteration Agreement pursuant to California Code of Regulations, Title 14, Section 1600 of the California Fish and Game Code.	Biological Resources, Hydrology and Water Quality
RR CUL-1/TCR-1	CRPC shall comply with the inadvertent discovery and evaluation of archaeological or tribal cultural resources pursuant to Public Resources Code, Section 21083.2.	Cultural Resources, Tribal Cultural Resources

Design Feature/ Regulatory Requirement	Description	Potential Impact Category
RR CUL-2/TCR-2	CRPC shall comply with procedures for discovery of human remains in accordance with California Health and Safety Code, Section 7050.5.	Cultural Resources, Tribal Cultural Resources
RR CUL-3/TCR-3	CRPC shall comply with Native American Heritage Commission notification and Most Likely Descendant consultation procedures, specified in Public Resources Code, Sections 5097.94 and 5097.98.	Cultural Resources, Tribal Cultural Resources
RR GEO-1	Pursuant to California Code of Regulations, Title 14, Section 1722 (k), Gas wells and pipelines operating within the Rio Vista Gas Field shall be designed and installed according to CalGEM's Field Rules for the Rio Vista Gas Field.	Geology and Soils
RR GEO-2	CRPC shall obtain grading permits issued by Solano, Sacramento, and Contra Costa Counties: A Major Grading Permit from Solano County, a Grading and Erosion Control Permit from Sacramento County, and a Grading Permit from Contra Costa County.	Geology and Soils, Hydrology and Water Quality
RR GHG-1	CRPC shall comply with all applicable requirements of the California Air Resources Board's Cap-and-Trade Program (California Code of Regulations, Title 17, Sections 95800 et seq.).	Greenhouse Gas Emissions
DF HAZ-1	CRPC shall implement Worker Safety and Environmental Awareness Project Training for all construction and operations personnel prior to and during Project activities.	Hazards and Hazardous Material

Design Feature/ Regulatory Requirement	Description	Potential Impact Category
RR HAZ-1	CRPC shall prepare, maintain, and implement a Pipeline Management Plan pursuant to CalGEM regulations (California Code of Regulations Title 14, Section 1774.2).	Hazards and Hazardous Materials
RR HAZ-2	CRPC shall prepare, maintain, and implement a Spill Contingency Plan in accordance with CalGEM regulations (California Code of Regulations, Title 14, Section 1722).	Hazards and Hazardous Materials
RR HYDRO-1	If required, CRPC shall obtain a Clean Water Act Section 401 Water Quality Certification, if required.	Hydrology and Water Quality
RR HYDRO-2	If required, CRPC shall obtain a Clean Water Act Section 404 Permit.	Hydrology and Water Quality
RR HYDRO-3	If required, CRPC shall obtain a Rivers and Harbors Act Section 10 Permit.	Hydrology and Water Quality
RR HYDRO-4	CRPC shall obtain coverage under the Construction General Permit issued by the State Water Resources Control Board and prepare and implement a Stormwater Pollution Prevention Plan (SWPPP).	Hydrology and Water Quality
RR HYDRO-5	Wells shall be cased and cemented in accordance with applicable CalGEM requirements and Title 14 California Code of Regulations, Sections 1722, 1722.2, 1722.3, 1722.4, 1722.5, and 1722.6 to prevent migration of drilling fluids, hydrocarbons, or formation fluids into protected groundwater zones.	Hydrology and Water Quality, Geology and Soils, Hazards and Hazardous Waste

3.0 ENVIRONMENTAL SETTING AND BASELINE

The Project is located within the existing Rio Vista Gas Field, which spans a portion of the Sacramento-San Joaquin River Delta and the eastern Montezuma Hills. Discovered in 1936, the Rio Vista Gas Field is the largest gas field in the Sacramento Basin of Northern California, and the largest dry gas field in the state, with an estimate of recoverable reserves at almost 4.0 trillion cubic feet of natural gas (AAPG, 2014) and gross gas production of 2.6 billion cubic feet per year (DOC, 2020). CRPC has been operating wells within the Rio Vista Gas Field since they acquired it from Rosetta in 2009. The field currently includes approximately 75 active gas wells, producing gas from six zones at depths between 3,700 and 5,300 feet.

The general topography of the Project area is characterized by rolling hills to the west of the Sacramento River that transition into the flat floodplains of the Delta to the east. The specific environmental settings for the Project area within Solano, Sacramento, and Contra Costa Counties are summarized below and detailed before each resource section included in Section 5.0, Environmental Analysis and Initial Study Checklist, below.

3.1 SOLANO COUNTY

The Solano County Project area is located within the eastern Montezuma Hills to the east of the Sacramento River. The Montezuma Hills are comprised of rolling hills used for dryland farming, sheep grazing, and wind energy production and the land cover in this region primarily consists of cultivated fields, fallow grasslands, and active farmed croplands, as observed during 2025 field surveys of the Project area (Mesa, 2025). Based on biological field surveys of the Project area completed by Mesa Biological (Mesa) on March 4 – 7 and 25 – 28, 2025, the proposed Solano County well pads and pipelines are located within areas previously disturbed by historical agricultural use. Several proposed well pad/pipeline locations had signs of past cultivation, including visible furrow lines. Some areas were observed to be actively managed for crop production, while others were observed to have been left fallow and currently used for livestock grazing (Mesa, 2025). There are several Project components that are located within or near areas that may be defined as wetlands. Representative photos of each proposed well pad area are provided below in Figure 3-1.

The Project area within Solano County is located within land designated as Grazing Land and Urban and Built-Up Land by the Solano County General Plan (Solano County, 2008). In addition, the Solano County Project area is located within the YSAQMD. Refer to Section 5.3.2 for a discussion of existing YSAQMD air quality baseline conditions in the region.

3.2 SACRAMENTO COUNTY

The Sacramento County Project area is located on Brannan Island, Twitchell Island, and Sherman Island within the Sacramento-San Joaquin Delta. The land use on these islands consists of a mix of agricultural, conservation, and restoration uses, although a significant portion of these islands are designated as "agriculture" under the CDFW Vegetation Classification and Mapping Program's Delta Vegetation and Land Use Update 2016 (Schwenkler, 2019). The land in this area has been extensively modified through consistent agricultural practices, including plowing, planting, and harvesting, which have replaced or altered natural vegetation communities (Mesa, 2025). Based on biological field surveys of the Project area completed by Mesa in March 2025, most of the proposed Sacramento County well pads and pipelines are located within these disturbed cropland areas (Mesa, 2025). Refer to Section 5.4, Biological Resources for details of sensitive species observed during field surveys and potentially occurring sensitive species. There are several Project components that are located within or near areas that may be defined as wetlands. Representative photos of each proposed well pad area are provided below in Figure 3-1.

The Project area within Sacramento County is located within land designated as Agricultural Crop Land by the Sacramento County General Plan (Sacramento County, 2022). In addition, the Sacramento County Project area is located within the SMAQMD. Refer to Section 5.3.2 for a discussion of existing SMAQMD air quality baseline conditions in the region.

3.3 CONTRA COSTA COUNTY

The Contra Costa County Project area is located on Bradford Island situated south and east of the San Joaquin River. The island is predominantly used for agricultural purposes. Land cover on the island primarily consists of cultivated agricultural fields, interspersed with patches of natural riparian vegetation and levee systems that protect the island from flooding (Mesa, 2025). No sensitive natural communities were observed in the Project area during 2025 field surveys (Mesa, 2025). Based on biological field surveys of the Project area completed by Mesa in 2025, the proposed Contra Costa County well pad is located in an upland area characterized by non-native grasses (Mesa, 2025). Additionally, the proposed CC-1 Pipeline runs through several potential wetlands on Bradford Island, under the San Joaquin River (through an existing conduit), and onto Sherman Island in Sacramento County, where it crosses two more potential wetlands. The existing conduit was installed in 2008 prior to CRPC's acquisition of their Rio Vista gas facilities and information on previous permitting of the conduit is unknown. Installation of the new CC-1 Pipeline through the existing conduit would require notification to and coordination with the California State Lands

Commission, but no new permits are expected to be required. Representative photos of the proposed well pad area are provided below in Figure 3-1.

The Project area within Contra Costa County is located within land designated as Agricultural Lands by Contra Costa General Plan (Contra Costa County, 2024a). In addition, the Contra Costa County Project area is located within the BAAQMD. Refer to Section 5.3.2 for a discussion of existing BAAQMD air quality baseline conditions in the region.

Figure 3-1. Representative Photographs of the Proposed Rio Vista Well Pad/Access Road Areas



Proposed SOL-1 Well Pad/Access Road Area. Aspect: Northwest



Proposed SOL-1 and SOL-2 Well Pad/Access Road Areas. Aspect: West



Proposed SOL-3 Well Pad/Access Road Area. Aspect: North



Proposed SOL-4 Well Pad/Access Road Area. Aspect: Southwest



Proposed SOL-5 Well Pad/Access Road Area. Aspect: South



Proposed SOL-6 Well Pad/Access Road Area. Aspect: South



Proposed SAC-BR-1 Well Pad/Access Road Area. Aspect: East



Proposed SAC-BR-2 Well Pad/Access Road Area. Aspect: East



Proposed SAC-BR-3 Well Pad/Access Road Area. Aspect: East



Proposed SAC-BR-4 Well Pad/Access Road Area. Aspect: Southeast



Proposed SAC-BR-5 Well Pad/Access Road Area. Aspect: North



Proposed SAC-BR-6 Well Pad/Access Road Area. Aspect: Southwest



Proposed SAC-TW-1 Well Pad/Access Road Area. Aspect: East



Proposed SAC-TW-2 Well Pad/Access Road Area. Aspect: West



Proposed SAC-TW-3 Well Pad/Access Road Area. Aspect: Southeast



Proposed SAC-SH-1 Well Pad/Access Road Area. Aspect: Northeast



Proposed CC-1 Well Pad/Access Road Area. Aspect: North

4.0 SUMMARY OF FINDINGS

4.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

This Project would potentially affect the environmental factors checked below in Table 4-1, involving at least one impact that is "Potentially Significant" or "Potentially Significant Unless Mitigation Incorporated" as indicated by the checklist on the following pages.

Table 4-1. Environmental Issues and Potentially Significant Impacts

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

4.2 ENVIRONMENTAL DETERMINATION

☐ On the basis of this initial evaluation: I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

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

☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures

based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

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

_____	_____
Signature	Date
_____	_____
Printed Name	Agency

5.0 ENVIRONMENTAL ANALYSIS AND INITIAL STUDY CHECKLIST

The evaluation of environmental impacts provided in this Initial Study is based on the impact questions contained in Appendix G of the State CEQA Guidelines. These questions, which are included in an impact assessment checklist for each environmental factor (Aesthetics, Agriculture and Forestry Resources, Air Quality, Biological Resources, etc.) are "intended to encourage thoughtful assessment of impacts." Each question is followed by a check-marked box with column headings that are defined below.

- **Potentially Significant Impact.** There is substantial evidence that a Project-related environmental effect may be significant and no feasible mitigation measures have been identified that would reduce the impact to a less than significant level. If there are one or more "Potentially Significant Impacts" that cannot be reduced to less than significant levels with implementation of mitigation measures, a Project Environmental Impact Report (EIR) would be prepared.
- **Less than Significant with Mitigation.** The Project may result in a significant environmental impact, but the incorporation of identified Project revisions or mitigation measures would reduce the identified effect(s) to a less than significant level.
- **Less than Significant Impact.** The Project would not result in any significant effects, or when the impact would not exceed applicable significance thresholds established by CEQA, the lead agency, or other applicable regulatory agencies. The Project's impact is less than significant even without the incorporation of Project-specific mitigation measures.
- **No Impact.** The Project would not result in any measurable impact or the category does not apply.

Detailed descriptions and analyses of impacts from Project activities and the basis for significance determinations are provided for each environmental factor on the following pages, beginning with Section 5.1, Aesthetics.

5.1 AESTHETICS

AESTHETICS[1] – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

5.1.1 Environmental Setting

The proposed Project site is located in Solano, Sacramento, and Contra Costa counties within the Sacramento-San Joaquin River Delta and the eastern Montezuma Hills. The Project includes the development of 83 new gas wells and associated equipment, facilities, and infrastructure within the Rio Vista Gas Field. The area surrounding the proposed Project area is primarily being used for cattle grazing and agriculture.

[1] Except as provided in Public Resources Code Section 21099, the following questions are based on the Appendix G CEQA Guidelines thresholds.

The closest incorporated residential area is the City of Rio Vista, located approximately 0.8 miles east of the SOL-3 Well Pad in Solano County. In addition, there are unincorporated, rural residences located approximately 0.61 miles southeast of the proposed SOL-3 Well Pad boundary in Solano County; approximately 0.63 miles southeast of the proposed SAC-SH-1 Well Pad boundary in Sacramento County; and approximately 0.7 miles southeast of the proposed CC-1 Well Pad in Contra Costa County. All approximate distances were measured using aerial imagery and geospatial measurements from the edge of each proposed well pad to the nearest residential area. Representative photographs of each Project County are provided in Figures 5.1-1 through 5.1-3.



Figure 5.1-1. Solano County: SOL-1 Well Pad Area. Aspect: Northwest



Figure 5.1-2a. Sacramento County: Proposed Area for SAC-BR-2 Well Pad. Aspect: East



Figure 5.1-2b. Sacramento County: Proposed Area for SAC-TW-3 Well Pad, Twitchell Island. Aspect: North



Figure 5.1-3. Contra Costa County: Proposed Area for CC-1, Bradford Island Well Pad. Aspect: North

Though implementation of the proposed Project does not include any new source of permanent lighting on the Project site, night-lighting will be implemented during nighttime hours, seven days a week during the drilling phase of the Project. LED mobile light plants will be utilized for safety and security during drilling activities. Temporary night-time lighting for Project activities would be shielded and directed downward and would be turned off when sufficient daytime light is present **(DF AES-1)**. This additional source of lighting will be removed when Project activities are concluded.

State Route (SR) 160, near Antioch, is the only officially recognized scenic roadway that runs past part of the Project area (Caltrans, 2025a). Specifically, SR 160 runs parallel to the Sacramento River and is approximately one mile west of the proposed SAC-BR-2 and SAC-BR-2 Well Pads, 0.72 miles west of SAC-BR-5, and 0.35 miles west of SAC-SH-1 in Sacramento County.

Public views of the Project area are along road corridors that run adjacent and through the Project area and include Montezuma Hills Road, Emigh Road, Boscoe Road, West Sherman Island Road, Santa Clara Avenue, Flat Land Lines, SR 160, and SR 12. Public views from waterways are present along the Sacramento and San Joaquin Rivers, Threemile Slough, Fishermans Cut, and other various sloughs in the Project vicinity. Of these public views, only SR 160 is a Caltrans-designated scenic roadway; all other public viewpoints are not from

recreation areas or scenic corridors designated by state or local agencies or plans.

5.1.2 Regulatory Setting

There are no federal or state regulations, laws, or policies pertaining to aesthetics relevant to the Project.

5.1.2.1 Local

Solano County General Plan (2008)

Chapter 8: Public Facilities and Services Element

- **Policy RS.P-58:** Require the siting of energy facilities in a manner compatible with surrounding land uses, including Travis Air Force Base, and in a manner that will protect scenic resources.

Sacramento County General Plan (2022)

Chapter 5: Land Use Element

- **Policy LU-31:** Strive to achieve a natural nighttime environment and an uncompromised public view of the night sky by reducing light pollution.

Chapter 14: Open Space Element

- **Policy OS-1:** Actively plan to protect, as open space, areas of natural resource value, which may include but are not limited to wetland preserves, riparian corridors, woodlands, and floodplains associated with riparian drainages.

Contra Costa General Plan (2024)

Chapter 4: Land Use Element

- **Policy LU-18:** Encourage development that complements the aesthetic style and character of existing development nearby to help build a cohesive identity for the area.

Chapter 7: Open Space Element

- **Policy COS-P12.9:** Enable flexibility in the design of projects along scenic routes and support innovative solutions to protect views and visual quality.

5.1.3 Impact Analysis

During construction, Project-related construction equipment and vehicles would be visible in-transit to the Project area via public roads as well as on the Project site transiently for a period of approximately 6.8 years. This estimated work schedule of 6.8 years was determined based on construction methods and emissions thresholds in each county (for more details on air quality and

greenhouse gas emissions refer to Sections 5.3 and 5.8). During operations, access roads, well pads, and permanent well facilities would be potentially visible to travelers on Montezuma Hills Road, Emigh Road, Boscoe Road, Santa Clara Avenue, Flat Land Lines, SR 160, and SR 12.

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

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

(a-b). Less Than Significant Impact. The Project area is within the active Rio Vista Gas Field within areas that are predominantly agriculturally developed or open space. The Project site contains no official scenic vistas designated by Caltrans or Solano, Sacramento, or Contra Costa Counties, but the site is visible from several areas utilized by the public including the Sacramento and San Joaquin Rivers, Threemile Slough, and Fishermans Cut (Caltrans, 2025b). Additionally, SR 160 is an officially recognized scenic roadway in Contra Costa and Sacramento Counties, which runs near part of the Project area (Caltrans, 2025a). Although site grading, including herbaceous vegetation removal, will be required in some locations visible from SR 160, no trees or rock outcroppings would be disturbed. There are no historic buildings within the Project area, and the closest residence is located approximately 0.8 miles from the proposed disturbance areas.

The Project area is within an active gas field utilized for gas exploration and production activities; therefore, views of the proposed facilities along SR 160 would be consistent with the surrounding area. As such, a less than significant impact would result.

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?

Less than Significant Impact. Public views of the Project area would be limited to motorists on road corridors that run along and through the Project area including Montezuma Hills Road, Emigh Road, Boscoe Road, Santa Clara Avenue, Flatland Lines, SR 160, and SR 12. The closest residence is located approximately 0.8 miles east of the SOL-3 Well Pad within the Solano County portion of the Project area. The Project area is located within an active gas field, and the wells and any supporting above ground infrastructure would have the same visual characteristics as those already present in the vicinity of the Project site. Each well pad will include condensate tanks (approximately 10 feet tall and 8.5 feet in diameter) and production units (approximately 6 feet tall by 5 feet

wide). Some well pads may also have compressors installed (approximately 12 feet tall, 12 feet wide, and 30 feet long). All condensate tanks, production units, compressors, or other associated equipment would be steel that has been painted tan, which would be consistent with existing equipment in the Rio Vista Gas Field and fits with the natural aesthetics of the Project area.

Local land use regulations related to light and glare require energy facilities to be sited in a way that is compatible with surrounding land uses and protects existing scenic resources. No permanent lighting is proposed. Temporary night-time lighting for Project activities would be shielded and directed downward and would be turned off when sufficient daytime light is present **(DF AES-1)**. Neither the construction nor operation of the proposed Project would conflict with any federal, state, or local policies regarding scenic quality; therefore, there would be a less than significant impact.

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

Less than Significant Impact. Project work activities would be conducted predominantly during daylight hours (from approximately 7:00 a.m. to 7:00 p.m.), and no significant sources of light or glare would be used during that time that would have the potential to affect views in the area. However, well drilling activities would occur 24 hours per day, with approximately 4 days required for each well. Completed installation of the wells is estimated at 15 days per well. LED mobile light plants will be utilized for safety and security during drilling activities. Temporary night-time lighting for Project activities would be shielded and directed downward and would be turned off when sufficient daytime light is present **(DF AES-1)**. These light sources would be transitory as each well is completed and would be fully removed following construction activities at each location.

The closest incorporated residence is located approximately 0.8 miles east of the SOL-3 Well Pad within the Project area. The closest rural residences are approximately 0.7 miles southeast of the proposed CC-1 Well Pad, approximately 0.63 miles southeast of the proposed SAC-SH-1 Well Pad, and 0.61 miles southeast of the proposed SOL-3 Well Pad. According to the Airport Data and Information Portal, the closest private airport is Walnut Grove Airport which is located approximately 9 miles to the northeast of the Sacramento County portion of the Project area. The nearest public airport is the Rio Vista Municipal Airport which is located approximately 2.1 miles from the Solano County portion of the Project area. Temporary night-lighting for drilling activities would comply with Sacramento County General Plan Policy LU-31, which requires outdoor lighting to preserve the natural nighttime environment by minimizing glare and

light pollution, and California Title 24 Energy Code, which requires outdoor lighting to be turned off when there is sufficient daylight.

Although the Project would require night-lighting during drilling activities, residences, airports, and sensitive receptors to glare are located at a significant distance from the Project sites and would comply with applicable state and local regulations related to light pollution. The Project would not create a new permanent source of light or glare which would adversely affect day or nighttime views in the area. A less than significant impact would result.

5.1.4 Mitigation Measures

The Project would not result in significant impacts to aesthetics; therefore, no mitigation is required. However, best management practices, including shielding temporary light sources and directing them downward during drilling will be incorporated to further reduce potential impacts **(DF AES-1)**. In addition, tanks and other equipment will be painted a neutral tan color and sized as needed for production capacity and similar in size to the equipment currently in place on other existing well pads.

5.2 AGRICULTURE AND FORESTRY RESOURCES

AGRICULTURE AND FORESTRY RESOURCES[2] – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Project of the California Natural Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub. Resources Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104, subd. (g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

[2] In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

5.2.1 Environmental Setting

The proposed Project involves the construction of 83 new natural gas wells, as well as associated equipment, facilities, and infrastructure within the CalGEM administrative boundary of the existing Rio Vista Gas Field in portions of Solano, Sacramento, and Contra Costa Counties. There are approximately 75 gas wells within the field currently active across the three counties. In Solano County, the proposed well pads and pipelines are located within areas previously disturbed by historical agricultural use. Several proposed well pad/pipeline locations had relic furrows, signs of past cultivation. Some areas are actively managed for crop production, while others were observed to have been left fallow and currently used for livestock grazing (Mesa, 2025). The Project-related land in Sacramento County has been extensively modified through consistent agricultural practices and has replaced or altered natural vegetation communities. Based on biological field surveys of the Project area completed by Mesa in 2025, most of the proposed Sacramento County well pads and pipelines are located within these disturbed cropland areas. The Contra Costa County Project area is located on Bradford Island situated south and east of the San Joaquin River. The island is predominantly used for agricultural purposes. Land cover on the island primarily consists of cultivated agricultural fields, interspersed with patches of natural riparian vegetation and levee systems that protect the island from flooding (Mesa, 2025).

Agriculture and livestock grazing are prominent land uses in portions of these counties. The proposed Project site is within land designated as Grazing Land and Urban and Built-Up Land by the Solano County General Plan, Agricultural Crop Land by the Sacramento County General Plan, and Agricultural Lands by Contra Costa General Plan (Sacramento County, 2019; Solano County, 2008; Contra Costa County, 2024a). According to the California Department of Conservation Farmland Mapping and Monitoring Program, the proposed Project site includes lands designated as Grazing Land, Urban and Built-Up Land, and Prime Farmland (DOC, 2024).

Proposed Project activities that intersect with Prime Farmland include approximately 17.3 acres within the Sacramento County portion of the Rio Vista Gas Field including SAC-BR-1, SAC-BR-2, SAC-BR-3, SAC-BR-4, SAC-BR-5, SAC-BR-6, SAC-TW-1, SAC-TW-3, and SAC-SH-1(Figure 5.2-1); this acreage was calculated using a geospatial overlay of the Project site onto a base map provided by the California Department of Conservation Farmland Mapping and Monitoring Program (DOC, 2024).

Additionally, the Project overlaps with approximately 20 acres of "Nonprime" Williamson Act land within the Solano County Project area including the following well pad/access road components: SOL-1 & SOL-2 Alt., SOL-2 Alt., SOL-3, SOL-3 Alt., SOL-4, SOL-5, and SOL-6 (Figure 5.2-1); a geospatial overlay of the

Project site onto a base map provided by the California Department of Conservation Farmland Mapping and Monitoring Program (DOC, 2024).

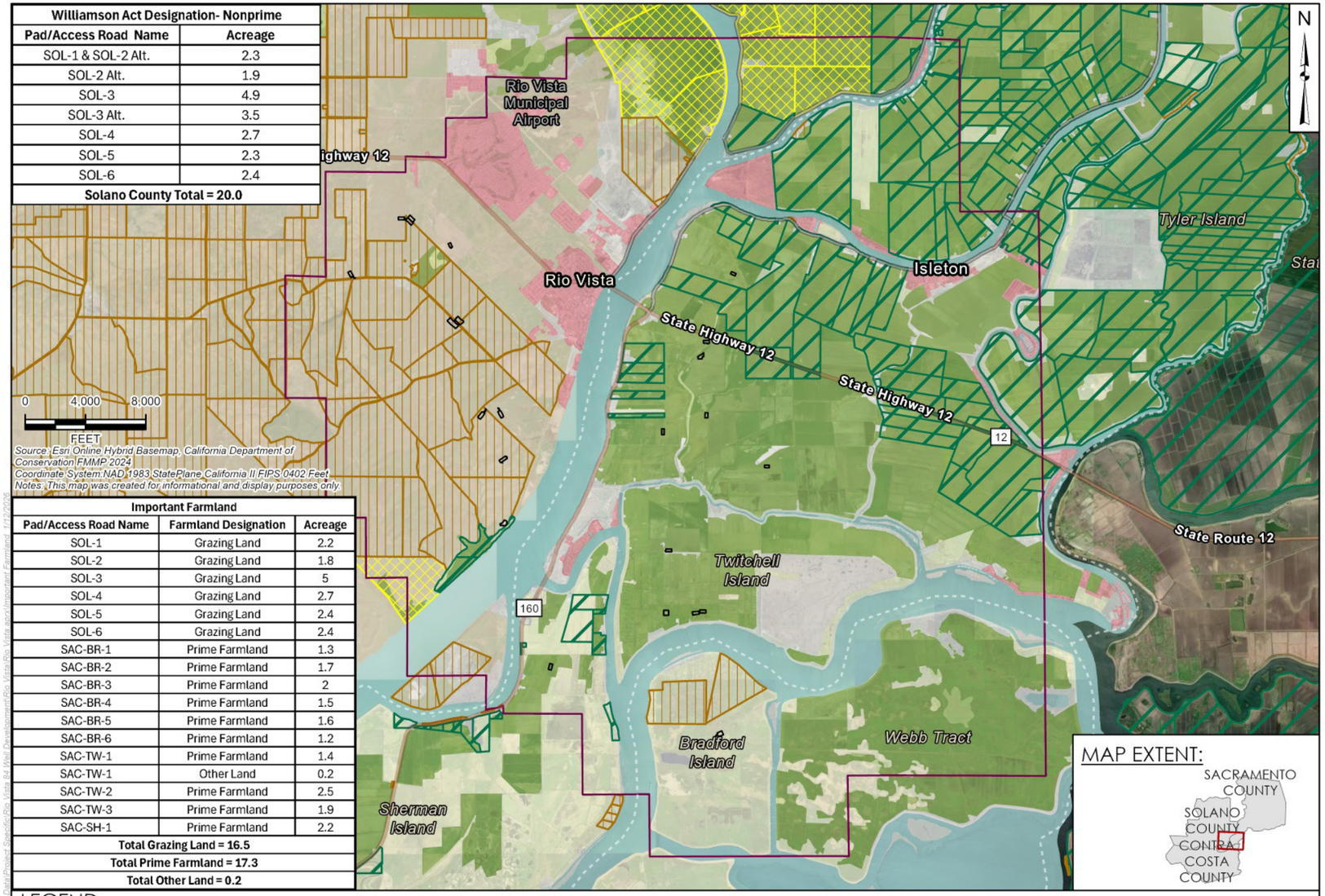
Further, a background review of Project area APNs on county-level land use databases for Solano, Sacramento, and Contra Costa counties was also completed and based on this review, an additional three Sacramento well pads/access road components and associated parcels overlap with active Williamson Act Parcels within Sacramento County, including SAC-SH-1, SAC-TW-1, and SAC-TW-2. However, oil and gas wells are listed as compatible uses in the existing contracts according to the Sacramento County Planning and Environmental Review Department (personal communication, November 4, 2025).

There is no Williamson Act overlap from well pad/access road components within Contra Costa County. Additionally, there are no forest lands located within the Project site (CDFW, 2024a).

Figure 5.2-1. Important Farmland in the Project Area

Williamson Act Designation- Nonprime	
Pad/Access Road Name	Acreage
SOL-1 & SOL-2 Alt.	2.3
SOL-2 Alt.	1.9
SOL-3	4.9
SOL-3 Alt.	3.5
SOL-4	2.7
SOL-5	2.3
SOL-6	2.4
Solano County Total = 20.0	

Important Farmland		
Pad/Access Road Name	Farmland Designation	Acreage
SOL-1	Grazing Land	2.2
SOL-2	Grazing Land	1.8
SOL-3	Grazing Land	5
SOL-4	Grazing Land	2.7
SOL-5	Grazing Land	2.4
SOL-6	Grazing Land	2.4
SAC-BR-1	Prime Farmland	1.3
SAC-BR-2	Prime Farmland	1.7
SAC-BR-3	Prime Farmland	2
SAC-BR-4	Prime Farmland	1.5
SAC-BR-5	Prime Farmland	1.6
SAC-BR-6	Prime Farmland	1.2
SAC-TW-1	Prime Farmland	1.4
SAC-TW-1	Other Land	0.2
SAC-TW-2	Prime Farmland	2.5
SAC-TW-3	Prime Farmland	1.9
SAC-SH-1	Prime Farmland	2.2
Total Grazing Land = 16.5		
Total Prime Farmland = 17.3		
Total Other Land = 0.2		



5.2.2 Regulatory Setting

There are no federal regulations, laws or policies pertaining to agriculture and forestry uses that are applicable to the proposed Project. The state Williamson Act and Farmland Security Zone Act programs are administered locally, and Solano, Sacramento, and Contra Costa Counties are a party to and enforce the contracts on lands within their unincorporated areas.

According to Solano County (personal communication, January 12, 2026), there are no further Williamson Act contracts being considered at this time. Future planning with respect to future Williamson Act parcel consideration is not included in current planning documents available from Sacramento (personal communication, January 12, 2026) or Contra Costa Counties (personal communication, January 12, 2026).

Local regulations, laws, and policies pertaining to agriculture and forestry resources relevant to the Project are included below.

5.2.2.1 Local

Solano County General Plan (2008)

Chapter 3: Agriculture Element

- **Policy AG.P-16:** Minimize potential conflicts between agricultural and residential uses by encouraging the use of urban-agricultural buffers within city municipal service areas between residential uses and agricultural lands.

Sacramento County General Plan (2022)

Chapter 1: Agriculture Element

- **Policy AG-5:** Projects resulting in the conversion of more than 50 acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland categories through the specific planning process or individual project entitlement requests to provide in-kind or similar resource value protection (such as easements for agricultural purposes):
    - Prime, statewide importance, unique, local importance, and grazing farmlands located outside the Urban Services Boundary (USB).
    - Prime, statewide importance, unique, and local importance farmlands located inside the USB.

The Board of Supervisors retains the authority to override impacts to Unique, Local, and Grazing farmlands, but not with respect to Prime and Statewide farmlands.

However, if that land is also required to provide mitigation pursuant to a Sacramento County endorsed or approved Habitat Conservation Plan (HCP), then the Board of Supervisors may consider the mitigation land provided in accordance with HCP as meeting the requirements of this section including land outside of Sacramento County.

Note: This policy is not tied to any maps contained in the Agricultural Element. Instead, the most current Important Farmland map from the Department of Conservation should be used to calculate mitigation.

Contra Costa General Plan (2024)

Chapter 7: The Conservation, Open Space, and Working Lands Element

- **Policy COS-P2.1:** Preserve large, contiguous areas of the county for agricultural production. Deny applications for projects that would lead to fragmentation of agricultural areas.

5.2.3 Impact Analysis

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 Natural Resources Agency, to non-agricultural use?

Less than Significant Impact. The proposed Project site is partially located within lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Farmland Mapping and Monitoring Program (DOC, 2024). However, the total acreage of conversion of Prime Farmland (approximately 17.3 acres) is isolated to Sacramento County and is below the mitigation threshold of 50 acres established by Sacramento County in Policy AG-5. Therefore, there would be a less than significant impact.

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

Less than Significant Impact. The Project will overlap with approximately 20 acres of area identified by the California Department of Conservation (DOC) as Nonprime Williamson Act land within the Solano County Project area including the following well pad/access road components: SOL-1 & SOL-2 Alt., SOL-2 Alt., SOL-3, SOL-3 Alt., SOL-4, SOL-5, and SOL-6 (Figure 5.2-1) (DOC, 2025a). However, oil and gas wells and pipelines are considered compatible land uses on Prime and Nonprime Williamson Act land in Solano County according to the Solano

County Uniform Rules and Procedures Governing Agricultural Preserves and Land Conservation Contracts (2012).

In addition, there are three Sacramento well pads/access road components and associated parcels that are considered active Williamson Act Parcels with Sacramento County, includingSAC-SH-1, SAC-TW-1, and SAC-TW-2); however, oil and gas wells are listed as compatible uses in these existing contracts according to the Sacramento County Planning and Environmental Review Department (personal communication, November 4, 2025). Therefore, there would be a less than significant impact.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub. Resources Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104, subd. (g))?

No Impact. The Project area is not located within forest land, timberland, or timberland zoned Timberland Production (CDFW, 2024a and CALFIRE, 2025a). Thus, there would be no conflict with timberland zoning, and therefore, there would be no impact.

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

No Impact. The Project area is not located within forest land, timberland, or timberland zoned Timberland Production (CDFW, 2024a and CALFIRE, 2025a). No loss or conversion of forest land would occur. Therefore, there would be no impact.

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?

Less than Significant Impact. The proposed Project site is partially located within lands designated as prime farmland, unique farmland, or farmland of statewide importance by the Farmland Mapping and Monitoring Program (DOC, 2024). However, the total acreage of conversion of Prime Farmland (approximately 17.3 acres) is isolated to Sacramento County and is below the mitigation threshold of 50 acres established by Sacramento County in Policy AG-5 with respect to conversion of farmlands. Therefore, there would be a less than significant impact.

The Project area is not located within forest land, timberland, or timberland zoned Timberland Production (CDFW, 2024a and CALFIRE, 2025a). Indirect impacts such as increased traffic on roads used for adjacent land use, dust from construction vehicles, and temporary access issues to adjacent farmland will be

intermittent and temporary for the duration of Project activities and would be mitigated through best management practices for erosion and dust control included in **MM AQ-1** and **MM BIO-15**. Therefore, there would be a less than significant impact.

5.2.4 Mitigation Measures

The Project would not result in significant impacts to agriculture and forestry resources; therefore, no mitigation is required.

5.3 AIR QUALITY

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

5.3.1 Environmental Setting

CARB has divided California into regional air basins according to topographic air drainage features. The Project area is located within the Rio Vista Gas Field which is located primarily within the Sacramento Valley Air Basin (SVAB) and the western edge of the San Francisco Bay Area Air Basin (SFBAAB). Refer to Section 2.1 for summary tables and figures showing the location of work areas and well pads within each County or Air District.

5.3.1.1 Regional Air Basins

Sacramento Valley Air Basin

The SVAB encompasses all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba counties, as well as portions of Placer County and eastern Solano County. The SVAB is a relatively flat area bounded on the west

by the Coast Ranges, on the north by the Cascade Range, on the east by the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During winter, fair-weather alternates with periods of extensive clouds and precipitation and sometimes foggy weather. In summer, temperatures are high, and humidity is low, although the incursion of the sea breeze into the SVAB helps moderate the summer heat. The daily temperature in the Sacramento Valley may range from 20° F to over 100° F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Prevailing wind in the SVAB is generally from the southwest at average speed ranging from 6 to 12 miles per hour (mph) due to marine breezes flowing through the Carquinez Strait, which is the major corridor for air moving into the SVAB from the west. The strength of incoming airflow varies daily and is weakest in the morning and increases in the evening hours. The Schultz Eddy, which is formed when mountains on the valley's western side divert incoming marine air, is associated with the influx of air through the Carquinez Strait (CARB, 1989). These prevailing wind patterns control the rate of dispersion of air pollutants in the SVAB.

The SVAB experiences temperature inversions that limit atmospheric mixing and trap pollutants near the ground surface. In the warmer months in the SVAB, subsidence inversions are most common, where sinking air acts like a cap over the region, trapping pollutants. Another type of inversion results from the mountains surrounding the SVAB that create a barrier to airflow, which can trap air pollutants in the valley. The stagnant air can result in surface temperature inversions that occur during winter nights and cause localized air pollution because of poor dispersion. Although these inversions occur throughout much of the year, they are less dominant during spring and fall, and the air quality during these seasons is generally better due to improved atmospheric mixing and dispersion conditions.

San Francisco Bay Area Air Basin

The SFBAAB includes nine counties: Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, San Francisco, western Solano, and southern Sonoma counties. The air basin is a geographical unit that closely aligns with the San Francisco Bay and delta hydrologic watersheds. The prevailing wind pattern generally flows from the Pacific Ocean through the Carquinez Strait, carrying pollutants from west to east. However, the air basin does not experience uniform meteorological conditions. Weather variations across the SFBAAB are significant, especially during the summer. In this season, coastal areas within the air basin can experience temperatures that are 40 to 50 degrees Fahrenheit (°F) cooler than inland regions, such as eastern Contra Costa County.

The combined effects of light winds, surrounding higher terrain, and frequent temperature inversions, which restrict vertical air movement, create a high potential for pollution in the Project area. During the summer months, light winds, warm temperatures, and the downwind location of the Project Site relative to San Francisco Bay contribute to the formation of ozone (O_3). In the winter, high atmospheric stability, calm winds, and cold temperatures create ideal conditions for the buildup of pollutants, such as carbon monoxide (CO), especially in areas with high traffic volumes or congestion and inhalable particulate matter (PM).

5.3.1.2 Sensitive Receptors and Surrounding Area Land Use

Some land uses are considered more sensitive to air pollution than others due to population groups or activities involved. Sensitive population groups include children, the elderly, acutely ill, chronically ill, and those with cardio-respiratory diseases. Residential areas are considered sensitive to air pollution because residents, particularly children and the elderly, often spend extended periods at home, leading to prolonged exposure to any pollutants present. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as workers tend to stay indoors most of the time.

In the Project area, surrounding land uses are a mix of agriculture (grazing) and industrial land uses associated with natural gas extraction wells. Sensitive receptors in the Project vicinity include residences and schools. CalGEM will review each proposed well at the time the Notice of Intention (NOI) is submitted to determine whether the proposed well is located within a 3,200-foot (approximately 0.61 mile) Health Protection Zone[3] based on CRPC's site plans and spatial analysis.

The closest sensitive receptors to the Project area are listed in Table 5.3-1 below. Distances shown in the table are approximate.

Table 5.3-1 Nearest Sensitive Receptors

County	Nearest Sensitive Receptor	Approximate Distance (miles)	Direction from Work Location	Work Location
Contra Costa County	Residential	0.70	Southeast	Well Pad CC-1

[3] In reference to Public Resources Code § 3280 https://codes.findlaw.com/ca/public-resources-code/prc-sect-3280/. Data provided by the operator.

County	Nearest Sensitive Receptor	Approximate Distance (miles)	Direction from Work Location	Work Location
Contra Costa County	School	5.24	South Southeast	Well Pad CC-2
Sacramento County	Residential	0.63	East Northeast	Well Pad SAC-SH-1
Sacramento County	School	1.48	West	Well Pad SAC-BR-3
Solano County	Residential 1	0.61	North	Well Pad SOL-2 Alt
Solano County	Residential 2	0.61	Southwest	Well Pad SOL-3
Solano County	School	1.27	East	Well Pad SOL-3

5.3.1.3 Air Pollutants

The primary chemical compounds that are considered air pollutants emitted into or formed in the atmosphere include criteria pollutants and Toxic Air Contaminants (TACs).

5.3.1.4 Criteria Pollutants

Criteria pollutants include the following components: O_3, CO, oxides of nitrogen (NO_X), reactive organic gases (ROG), Sulfur Dioxide (SO_2), particulate matter with a diameter of 10 microns or less (PM_{10}), and particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) (CARB, 2025e).

Ozone. O_3 is formed in the atmosphere through complex photochemical reactions involving nitrogen oxides (NO_x), reactive organic gases (ROG, also known as reactive organic compounds), and sunlight. These reactions occur over several hours. Since O_3 is not emitted directly into the atmosphere but instead forms as a result of these reactions, it is classified as a secondary or regional pollutant. Because the formation of O_3 takes time, peak ozone levels are often found downwind of major source areas. O_3 is considered a respiratory irritant, and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and individuals with existing respiratory conditions are particularly vulnerable to O_3 exposure (CARB, 2025e).

Carbon Monoxide. CO is primarily formed through the incomplete combustion of organic fuels. Higher CO levels are typically observed during the winter months when dispersion is limited by morning surface inversions. Seasonal and diurnal variations in meteorological conditions often result in lower CO levels in

the summer and afternoon hours. CO is an odorless, colorless gas that affects red blood cells by binding to hemoglobin, reducing the amount of oxygen that can be transported to the body's organs and tissues. This can lead to health issues, particularly for individuals with cardiovascular disease, and can also impact mental alertness and vision (CARB, 2025e).

Oxides of Nitrogen. The term 'oxides of nitrogen' refers to two gases—nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless gas produced during combustion processes, which quickly oxidizes to form NO_2, a brownish gas. The highest levels of NO_2 are typically found in urban areas with heavy traffic. Exposure to NO_2 can increase the risk of respiratory infections in children and may cause breathing difficulties, even in healthy individuals, with a particularly heightened effect on those with asthma (CARB, 2025e).

Sulfur Dioxide. SO_2 is a colorless, reactive gas produced by burning sulfur-containing fuels, such as coal and oil, as well as through various industrial processes. The highest concentrations of SO_2 are typically found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways, leading to wheezing and shortness of breath. Prolonged exposure to SO_2 can result in respiratory illnesses and worsen existing cardiovascular conditions (CARB, 2025e).

Particulate Matter. Ambient air quality standards have been established for PM_{10} and $PM_{2.5}$. Both types consist of various particles suspended in the air, including metal, soot, smoke, dust, and fine mineral particles. The toxicity and chemical activity of these particles can vary depending on their source. The primary source of PM_{10} emissions is soil disturbance through road use, construction, agriculture, and natural windblown dust. Other sources include sea salt, combustion processes (such as those in gasoline and diesel vehicles), and wood burning. Primary sources of $PM_{2.5}$ emissions include construction sites, wood stoves, fireplaces, and diesel truck exhaust. Particulate matter is a health concern because when inhaled because it can cause permanent lung damage. Although both sizes of particulates can be harmful, $PM_{2.5}$ is typically more damaging due to its ability to remain in the lungs (CARB, 2025e).

5.3.1.5 Toxic Air Contaminants

TACs are defined as air pollutants which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health by the California Health and Safety Code Section 39655 and the CARB. Federal hazardous air pollutants (HAPs) recognized by the U.S. Environmental Protection Agency (EPA) are also considered to be TACs.

The combustion of diesel fuel in truck engines (as well as other internal combustion engines) produces exhaust containing several compounds that

have been identified as TACs, in particular, diesel particulate matter (DPM). DPM has been recognized as a carcinogen and identified as a TAC in California (CARB, 2025f). The Multiple Air Toxics Exposure Study IV (MATES IV) in the South Coast Air Basin indicated DPM as a major contributor to cancer risk associated with TACs in southern California, accounting on average for 68 percent of the total risk (SCAQMD, 2015). This study is applicable to the Project area based on similar exposure to urban pollution from the Bay area. According to CARB, DPM emissions account for approximately 70 percent of the estimated cancer risk associated with TACs in California (CARB, 2025f). NO_x and DPM are currently controlled through the use of selective catalytic reduction control systems and diesel exhaust fluid on all new diesel trucks and heavy equipment, respectively. In addition, older truck fleets are required to gradually install exhaust particulate filters.

CARB maintains the Portable Equipment Registration Program (PERP) which is a voluntary program that allows equipment owners to register portable equipment such as drilling rigs and generators with CARB. Each air district determines the type of portable equipment that requires a permit. An owner or operator of portable equipment that needs a permit for the operation of the equipment at a given location may also register in PERP in lieu of having to get a permit from the air districts for operation at other locations. A PERP registration does not exempt equipment from local district rules on operating hours or emissions standards.

Sources of TACs in the Project region include mobile sources (motor vehicles, trains, equipment), stationary sources such as dry cleaners (perchloroethylene emissions), internal combustion engines and gasoline dispensing stations (vapor emissions of benzene and other components of gasoline). No permitted TAC facilities are located within one mile of a work area or well pad within Contra Costa County (BAAQMD, 2025) and eight TAC facilities are located within one mile of a work area or well pad within Sacramento County (SMAQMD, 2025). The YSAQMD does not have a public database of facilities.

5.3.2 Regulatory Setting

Federal, state, and local regulations, laws, rules, policies or other mandatory guidance from a lead or responsible agency pertaining to air quality are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.3.2.1 Federal and State Regulations

The U.S. EPA has jurisdiction under the Federal Clean Air Act (FCAA) and its amendments. The CARB has jurisdiction under the California Clean Air Act (CCAA) and California Health and Safety Code. The U.S. EPA and CARB classify

an area as attainment, unclassified, or non-attainment, depending on whether the monitored ambient air quality data show compliance, insufficient data to determine compliance, or non-compliance with the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), respectively.

The U.S. EPA established NAAQS to protect public health (primary standards) and welfare (secondary standards). Air basins are classified by the U.S. EPA as in "attainment" or "non-attainment" based on meeting the NAAQS. The CARB established the more stringent CAAQS, which also requires air basins to be designated as in "attainment" or "non-attainment" based on meeting the CAAQS. NAAQS and CAAQS have been established for O_3, CO, NO_2, SO_2, suspended particulate matter (e.g., dust) and lead (refer to Table 5.3-2). In addition, California has standards for H_2S, sulfates, and visibility-reducing particles. Table 5.3-2 lists applicable ambient air quality standards.

Table 5.3-2. Ambient Air Quality Standards (State and Federal)

Pollutant	Averaging Time	California Standard	Federal Primary Standards
Ozone	1-Hour	0.09 ppm	-
Ozone	8-Hour	0.070 ppm	0.070 ppm
Nitrogen Dioxide	Annual	0.030 ppm	0.053 ppm
Nitrogen Dioxide	1-Hour	0.18 ppm	0.100 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
Carbon Monoxide	1-Hour	20.0 ppm	35.0 ppm
Sulfur Dioxide	24-Hour	0.04 ppm	0.14 ppm
Sulfur Dioxide	1-Hour	0.25 ppm	0.075 ppm
PM_{10}	Annual	20 µg/m^3	-
PM_{10}	24-Hour	50 µg/m^3	150 µg/m^3
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3
$PM_{2.5}$	24-Hour	-	35 µg/m^3
Lead	30-Day Average	1.5 µg/m^3	-
Lead	3-Month Average	-	0.15 µg/m^3

Notes:

µg/m^3 – micrograms per cubic meter
ppm – parts per million
Source: CARB 2025b

Senate Bill (SB) 1137 (Pub. Resources Code §§ 3280-3284). SB 1137 establishes a 3,200-foot HPZ around homes, schools, hospitals, and other sensitive locations, prohibiting the drilling of new oil and gas wells within this zone. The bill also requires stringent air and water pollution controls, along with emergency response plans, for existing operations located within the HPZ**.**

CalGEM will review each proposed well at the time the NOI is submitted to determine whether the proposed well is located within a 3,200-foot Health Protection Zone[4] based on CRPC's site plans and spatial analysis.

The closest sensitive receptors to the Project area, listed in Table 5.3-1 above are shown as approximate.

Portable Equipment Registration Program (PERP) (Cal. Code Regs. tit. 13, §§ 2450-2451). The California Air Resources Board (CARB) administers the Statewide PERP, which establishes a uniform program to regulate portable engines and portable engine-driven equipment units. It is a voluntary program that allows an equipment owner to register portable equipment such as drilling rigs and generators with CARB. PERP registered engines and equipment units may operate anywhere in California without needing to obtain additional permits from local air districts.

In-Use Off-Road Diesel-Fueled Fleets Regulation (Cal. Code Regs. tit. 13, §§ 2449-2449.5). The In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) applies to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers). This includes vehicles that are rented or leased. The main goal of the regulation is to minimize the amount of PM and NO_x released into the atmosphere by in-use off-road diesel vehicles in the state **(RR AQ-1)**.

- Vehicle Reporting: All vehicles subject to the regulation must be reported to CARB through the online reporting system known as DOORS.
- Labeling: Once reported, vehicles are assigned a unique Equipment Identification Number (EIN), which must be labeled on the vehicle within 30 days.

[4] As defined by Public Resources Code § 3280 https://codes.findlaw.com/ca/public-resources-code/prc-sect-3280/

- Emission Reductions: Fleet owners must meet emission reduction targets by retiring or replacing older vehicles, repowering engines, or installing Verified Diesel Emission Control Strategies (VDECS).
- Restrictions on Adding Older Vehicles: The regulation restricts the addition of vehicles with older, less clean engines (e.g., U.S. EPA Tier 0, 1, or 2) to fleets.
- Tier Phase-Out: Phased retirement of older and higher-emitting vehicles with Tier 0, 1, and 2 off-road engines is required, with staggered deadlines based on fleet size.
- Renewable Diesel Requirement: As of January 1, 2024, fleets are required to use renewable diesel (R99 or R100) in their vehicles, with certain exceptions for unavailability.
- Idling Limits: Unnecessary idling of vehicles is limited to five minutes.
- Written Idling Policy: Medium and large fleets must have a written idling policy.
- Disclosure When Selling Vehicles: Sellers must provide a specific disclosure about the regulation on the bill of sale or invoice.
- Contracting Requirements: Prime contractors and public works awarding bodies must obtain and retain valid Certificates of Reported Compliance from fleets involved in contracts.

5.3.2.2 Local

The portions of the Project that are located within Sacramento and Solano Counties are further located within Sacramento Federal Non-attainment Area (SFNA) as defined by the U.S. EPA.

The districts have air quality plans and CEQA guidance documents that in general are focused on demographic forecasts and planned land use development, planned transportation system improvements or control measures, and development and planning of long-term stationary sources of air pollutant emissions.

Air Quality Regulation and Planning. Air Quality in the area of Project site is managed by the BAAQMD, SMAQMD and the YAAQMD who share responsibility with the CARB for ensuring that all state and federal ambient air quality standards are attained within SVAB and SFBAAB. Attainment status for each county is summarized in Table 5.3-3.

Table 5.3-3. Air Quality Attainment Status per County

Pollutant	Contra Costa County	Sacramento County	Solano County
NAAQS - Ozone	Nonattainment	Nonattainment	Nonattainment
CAAQS - Ozone	Nonattainment Transitional	Nonattainment	Nonattainment Transitional
NAAQS - Nitrogen Dioxide	Unclassifiable Attainment	Unclassifiable Attainment	Unclassifiable Attainment
CAAQS - Nitrogen Dioxide	Attainment	Attainment	Attainment
NAAQS - Carbon Monoxide	Attainment	Attainment	Attainment
CAAQS - Carbon Monoxide	Attainment	Attainment	Attainment
NAAQS - Sulfur Dioxide	Attainment	Attainment	Attainment
CAAQS - Sulfur Dioxide	Attainment	Attainment	Attainment
NAAQS - PM_{10}	Nonattainment	Nonattainment	Nonattainment
CAAQS - PM_{10}	Nonattainment	Nonattainment	Nonattainment
NAAQS - $PM_{2.5}$	Nonattainment	Nonattainment	Nonattainment
CAAQS - $PM_{2.5}$	Nonattainment Transitional	Attainment	Nonattainment Transitional*
NAAQS - Lead	Unclassifiable Attainment	Unclassifiable Attainment	Unclassifiable Attainment
CAAQS - Lead	Unclassifiable Attainment	Unclassifiable Attainment	Unclassifiable Attainment

Notes: Source: CARB 2025c

The BAAQMD, SMAQMD and YSAQMD address O_3 and PM exceedances through a combination of regulatory measures, planning documents (State Implementation Plans/Maintenance Plans), and public outreach programs aimed at reducing emissions and public exposure. The following section summarizes each district's approach:

BAAQMD PM and O_3 Attainment Approach

The BAAQMD has prioritized reducing PM and O_3 nonattainment through several strategies which include but are not limited to the following:

- **Clean Air Plans:** The BAAQMD Final 2017 Clean Air Plan (BAAQMD CAP) outlines a comprehensive set of control measures aimed at reducing emissions of pollutants such as PM, O_3, and TACs (BAAQMD, 2017).
- **Rules and Regulations:** The Air District enforces regulations and permitting requirements to limit emissions of PM, NO_x, ROG, and TACs from various sources.

- **Wood-Burning Regulation:** Under Regulation 6, Rule 3, BAAQMD restricts emissions from wood-burning devices to reduce PM from wood smoke.

SMAQMD PM and O_3 Attainment Approach

SMAQMD has prioritized reducing PM and O_3nonattainment through several strategies which include but are not limited to the following:

- **Maintenance Plans**: The Second 10-Year PM_{10} Maintenance Plan ensures compliance with PM_{10} standards through 2033 and includes contingency measures to address potential future violations (SMAQMD, 2021b).
- **Ozone Plans**:
    - The Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan targets reductions in ozone precursors such as NO_x and reactive organic gases (ROGs) through regulations on industry, vehicles, and consumer products (SMAQMD, 2017).
    - Draft 2023 Sacramento Regional Plan for the 2015 8-Hour Ozone Standard targets the reduction of NO_x emissions from mobile and area sources, acknowledging wildfire impacts (SMAQMD, 2023a). Note this plan has not been approved by the U.S. EPA.
- **Rules and Regulations**: SMAQMD enforces Best Available Control Measures (BACM) and Best Available Control Technology (BACT) for stationary sources to minimize emissions of PM and ozone precursors. Additional project-specific rules are summarized in subsequent sections.
- **Wildfire Mitigation Plan**: Developed to meet U.S. EPA requirements, this plan accounts for exceptional events like wildfires that influence air quality data (SMAQMD, 2023b).
- **"Check Before You Burn" Program**: This regulation prohibits wood burning in fireplaces or stoves when fine particle pollution forecasts exceed 32–35 µg/m³, unless using U.S. EPA-certified devices.
- **New Planning Standards**: In response to the U.S. EPA's recent tightening of the annual $PM_{2.5}$ standard, SMAQMD is initiating new planning efforts to achieve compliance with these stricter requirements (SMAQMD, 2024).

YSAQMD PM and O_3 Attainment Approach

YSAQMD has prioritized addressing PM and O_3 nonattainment through several strategies which include but are not limited to the following:

- **Ozone Plans:** Similar to SMAQMD, YSAQMD implements the Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan. This plan focuses on reducing precursor pollutants such as NO_x and ROGs by enforcing rules for industry, vehicles, and consumer products (SMAQMD, 2023a).
- **PM Planning:** YSAQMD collaborates with surrounding air districts within the SFNA to reduce PM emissions.

Solano County General Plan (2008)

Chapter 5: Public Health and Safety Chapter

- **Policy HS.P-85:** Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).
- **Regulation HS.I-58:** Require that when development proposals introduce new significant sources of toxic air pollutants, they prepare a health risk assessment as required under the Air Toxics "Hot Spots" Act (Assembly Bill 2588, 1987) and based on the results of the assessment, establish appropriate land use buffer zones around those areas posing substantial health risks.
- **Regulation HS.I-60:** Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects.
- **Regulation HS.I-63:** Encourage coordination between the Bay Area and Yolo-Solano Air Quality Management Districts for consistency in air quality planning efforts.
- **Regulation HS.I-65:** Assess air quality impacts using the latest version of the California Environmental Quality Act Guidelines and guidelines prepared by the applicable Air Quality Management District.

Sacramento County General Plan (2022)

Air Quality Element

- **Policy AQ-3:** Buffers and/or other appropriate exposure reduction measures shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. The CARB's "Strategies

to Reduce Air Pollution Exposure Near High Volume Roadways" Technical Advisory and the AQMD's "Mobile Sources Air Toxics Protocol" or applicable AQMD guidance shall be utilized when establishing these exposure reduction measures.

- **Policy AQ-4:** Developments[5] which meet or exceed thresholds of significance for ozone precursor pollutants, and/or Greenhouse Gases (GHG) as adopted by the SMAQMD, shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan and/or a Greenhouse Gas Reduction Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.
- **Policy AQ-16:** Prohibit the idling of on-and off-road engines when the vehicle is not moving or when the off-road equipment is not performing work for a period of time greater than five minutes in any one-hour period.
- **Policy AQ-17:** Promote optimal air quality benefits through energy conservation measures in new development.
- **Policy AQ-19:** Require all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects.

Contra Costa County General Plan (2024)

Chapter 9: Health and Safety Element

- **Policy HS-P1.3:** Require new development to adhere to BAAQMD's Planning Healthy Places guidance when local conditions warrant.
- **Policy HS-P1.4:** Require new industrial development to locate significant pollution sources at the maximum distance possible from sensitive receptors.
- **Policy HS-P1.5:** Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TACs to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD CEQA Air Quality Guidelines, based on the findings of the Health Risk Assessment.
- **Policy HS-P1.6:** Require that any mitigation of air quality impacts occur onsite to the extent feasible to provide the greatest benefit to residents in neighboring communities that are most impacted. For mitigation

[5] This refers to the operational phase of the Project.

that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets/mitigation within that community unless determined infeasible by the County.

- **Policy HS P1.7:** Encourage modernization projects at existing industrial facilities that support state energy and climate goals and achieve all of the following:
    a) Improved community and worker health and safety.
    b) Enhanced environmental protection.
    c) Significant reductions in criteria pollutants, TACs, and GHGs using Best Available Retrofit Control Technology when applicable.
    d) Timely remediation of preexisting and future on- and off-site contamination as a component of the project or through a fully funded work program that restores the site to a condition suitable for commercial or industrial use, or to a higher standard when determined necessary and feasible on a case-by-case basis.
- **Policy HS-P1.9:** Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.
- **Policy HS-P1.10:** Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.

Applicable Air District Rules

Yolo-Solano Air Quality Management District

- **YSAQMD Regulation 2, Rule 2.3 – Ringelmann Chart**: Visible emissions from stationary diesel-powered equipment are not allowed to exceed 40 percent opacity for more than 3 minutes in any 1 hour.
- **YSAQMD Regulation 2, Rule 2.5 – Nuisance:** Dust emissions must be prevented from creating a nuisance to surrounding properties.
- **YSAQMD Regulation 2, Rule 2.11 – Particulate Matter Concentration:** A person shall not release or discharge into the atmosphere from any single source operation, dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

- **YSAQMD Regulation 2, Rule 2.12 – Specific Contaminants:** A person shall not discharge into the atmosphere from any single source of emission whatsoever, any one or more of the following contaminants, in any state or combination thereof, in excess of the following concentrations at the point of discharge:
    - Sulfur compounds calculated as sulfur dioxide (SO_2) 0.2 percent, by volume at standard conditions.
    - Combustion Contaminants: 0.31 grains per cubic foot of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions.
- **YSAQMD Regulation 2, Rule 2.23 – Fugitive Hydrocarbon Emissions:** All applicable facilities including natural gas operations shall adhere to the inspections, repairs, and administrative requirements as outlined within the rule standards.
- **YSAQMD Regulation 3, Rule 3.26 – Oil and Gas Equipment Registration:** All owners or operators of any equipment which is subject to California's Oil and Gas Regulation (COGR) must register their equipment with the District to ensure compliance with the COGR. **YSAQMD Regulation 3, Rule 3.1 – General Permit Requirements:** This rule provides an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits.
- **YSAQMD Regulation 3, Rule 3.4 – New Source Review:** The purpose of this rule is to provide for the review of new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.
- **YSAQMD Regulation 3, Rule 3.5 – Emissions Reduction Credits:** This rule provides an administrative mechanism for quantifying, adjusting and certifying surplus emission reductions for: later use as offsets pursuant to YSAQMD, state or federal rules or regulations; or transfer to other sources as offsets pursuant to Rule 202, new source review **(RR AQ-2)**.

Sacramento Metropolitan Air Quality Management District

- **SMAQMD Regulation 2, Rule 201 – General Permit Requirements:** This rule provides an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits.

- **SMAQMD Regulation 2, Rule 202 – New Source Review:** The purpose of this rule is to provide for the issuance of authorities to construct and permits to operate at new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.
- **SMAQMD Regulation 2, Rule 204 – Emissions Reduction Credits:** This rule provides an administrative mechanism for quantifying, adjusting and certifying surplus emission reductions for: later use as offsets pursuant to SMAQMD, state or federal rules or regulations; or transfer to other sources as offsets pursuant to Rule 202, new source review **(RR AQ-3)**.
- **SMAQMD Regulation 4, Rule 401 - Ringelmann Chart:** A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three minutes in any one hour which is:
    - As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
    - Of such opacity as to obscure a human observer's view, or a certified calibrated in-stack opacity monitoring system to a degree equal to or greater than does smoke described in this rule.
- **SMAQMD Regulation 4, Rule 402 – Nuisance.** A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.
- **SMAQMD Regulation 4, Rule 403 – Fugitive Dust.** A person shall take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne beyond the property line from which the emission originates, from any construction, handling or storage activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation. Reasonable precautions shall include, but are not limited to:

    - Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the construction of roadways or the clearing of land.
    - Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
    - Other means approved by the Air Pollution Control Officer.

- **SMAQMD Regulation 4, Rule 404 – Particulate Matter.** Except as otherwise provided in Rule 406 – Specific Contaminants, a person shall not discharge into the atmosphere from any source particulate matter in excess of 0.23 grams per dry standard cubic meter (0.1 grains per dry standard cubic foot).
- **SMAQMD Regulation 4, Rule 406 – Specific Contaminants:** A person shall not discharge into the atmosphere from any single source of emission whatsoever sulfur compounds in any state or combination thereof exceeding in concentration at the point of discharge: sulfur compounds, calculated as SO_2: 0.2 percent by volume, except as otherwise provided in Rule 420. Additionally, A person shall not discharge into the atmosphere from any single source of emission whatsoever, combustion contaminants in any state or combination thereof exceeding in concentration at the point of discharge: 0.23 grams per dry standard cubic meter (0.1 grains per dry standard cubic foot) of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions except that 0.69 grams per dry standard cubic meter (0.3 grains per dry standard cubic foot) of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions shall be applied to incinerators rated less than or equal to 100 pounds per hour capacity and installed before July 1, 1978. In measuring the combustion contaminants from other than pathological incinerators used to dispose of combustible refuse by burning, the CO_2 produced by combustion of any liquid or gaseous fuels shall be excluded from the calculation to 12 percent CO_2.
- **SMAQMD Regulation 4, Rule 420 – Sulfur Content of Fuel:** A person shall not burn any gaseous fuel containing sulfur compounds in excess of 1.14 grams per cubic meter (50 grains per 100 cubic feet) of gaseous fuel, calculated as hydrogen sulfide at standard conditions, or any liquid fuel or solid fuel having a sulfur content in excess of 0.5 percent by weight.

Bay Area Air Quality Management District

- **BAAQMD Regulation 2, Rule 1 – Permit General Requirements:** This rule includes criteria for issuance or denial of permits, exemptions, and appeals against decisions of the Air Pollution Control Officer and BAAQMD actions on applications.
- **BAAQMD Regulation 2, Rule 2 – New Source Review:** This Rule applies to all new and modified sources that require an ATC or PTO. The purpose of this Rule is to implement the New Source Review provisions of the federal and California Clean Air Acts (including the federal non-attainment New Source Review, Prevention of Significant Deterioration, and Minor New Source Review provisions) and the no-net-increase requirements of the California Health and Safety Code, among other requirements.
- **BAAQMD Regulation 2, Rule 4 – Emissions Banking:** The banking of Emission Reduction Credits (ERCs) is intended to provide a mechanism for sources to obtain offsets under the New Source Review regulations contained in Regulation 2, Rule 2 of the District and is not intended to recognize any pre-existing vested right to emit air pollutants **(RR AQ-4)**.
- **BAAQMD Regulation 2, Rule 9 – Interchangeable Emissions Reduction Credits:** The purpose of this regulation is to provide a methodology to calculate and track the generation, use and trading of Interchangeable Emission Reduction Credits (IERCs) from stationary sources of NO_x within the BAAQMD in order to provide a voluntary, cost-effective, alternate means of compliance with certain District NO_x rules and regulations.
- **BAAQMD Regulation 6, Rule 1 - General Requirements.** This rule limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity.
- **BAAQMD Regulation 7 – Odorous Substances:** This places general limitations on odorous substances and specific emission limitations on certain odorous compounds. A person or facility must meet all limitations of this regulation, but meeting such limitations shall not exempt such person or facility from any other requirements of BAAQMD, state, or national law. The limitations of this regulation are not applicable until BAAQMD receives odor complaints from 10 or more complainants within a 90-day period, alleging that a person or facility has caused odors perceived at or beyond the property line of such person or facility and deemed to be objectionable by the complainants in the normal course of their work, travel, or residence. When the limitations of this regulation become effective, as a result of citizen complaints described above, the limits remain effective until such time as no citizen complaints have been received by BAAQMD

for 1 year. The limits of this regulation become applicable again if BAAQMD receives odor complaints from five or more complainants within a 90-day period. BAAQMD staff investigate and track all odor complaints it receives, make attempts to visit the site and identify the source of the objectionable odor, and assist the owner or facility in finding a way to reduce the odor.

- **BAAQMD Regulation 8, Rule 37 – Natural Gas and Crude Oil Production Facilities:** This rule establishes requirements to control emissions of organic compounds from natural gas and crude oil production and processing operations. The rule applies to equipment and activities associated with oil and gas production, including components that may emit fugitive organic compounds. Organic compound emissions, including total organic compounds (TOCs) and volatile organic compounds (VOCs), are regulated because VOCs contribute to the formation of ground-level ozone. The rule includes requirements to reduce emissions from applicable equipment through measures such as leak detection and repair, equipment standards, and operational requirements.
- **BAAQMD Regulation 9, Rule 8 – Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines.** This rule limits the emissions of nitrogen oxides and carbon monoxide from stationary internal combustion engines with an output rated by the manufacturer at more than 50 brake horsepower.

5.3.2.3 Significance Thresholds

Significance thresholds are used by air districts to evaluate whether project-generated emissions would exceed levels considered to be significant under CEQA. The BAAQMD's 2022 CEQA Air Quality Guidelines (BAAQMD Guidelines) (BAAQMD, 2022), The SMAQMD's Guide to Air Quality Assessment in Sacramento County (SMAQMD AQ Guide) (SMAQMD, 2020) and the YSAQMD's Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD Handbook) (YSAQMD, 2007) include significance thresholds for short-term Project (construction) and long-term (operational) air pollutant emissions (included in Tables 5.3-4 and 5.3-5 below).

According to the SMAQMD AQ Guide, the $PM_{2.5}$ and PM_{10} significance thresholds presented in Table 5.3-4 apply only to projects that implement the following feasible Basic Construction Emissions Control Practices (BCECPs) and Best Management Practices (BMPs):

- Control of fugitive dust is required by SMAQMD Rule 403 and enforced by District staff.

- Water all exposed surfaces twice daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The appropriate Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to five minutes. Provide clear signage that posts this requirement for workers at the entrances to the project site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Projects that do not incorporate these measures are subject to a more stringent threshold of 0 pounds per day for both $PM_{2.5}$ and PM_{10} emissions.

According to the YSAQMD Handbook, a project would result in a significant impact to air quality if it would substantially contribute to CO concentrations that exceed the CAAQS (YSAQMD 2007). According to the YSAQMD Handbook, a project would result in a significant impact to air quality if it would substantially contribute to CO concentrations that exceed the CAAQS (YSAQMD 2007). The Handbook indicates that a project has the potential to exceed the CAAQS for CO if project-generated traffic would reduce the Level of Service (LOS) to an unacceptable LOS or substantially worsen an already existing peak-hour LOS on

one or more streets or intersections in the project vicinity. LOS is a measure of roadway operating conditions, ranging from LOS A (free-flow conditions) to LOS F (congested, oversaturated conditions). Under the YSAQMD screening criteria, an unacceptable LOS generally refers to LOS E or LOS F conditions, where roadway capacity is constrained and vehicle delays increase, potentially resulting in increased localized CO concentrations..

Table 5.3-4. Construction Air Quality Thresholds of Significance

Pollutant/ Precursor	BAAQMD (lbs/day)	BAAQMD (Tons/yr)	SMAQD (lbs/day)	SMAQD (Tons/yr)	YSAQMD (lbs/day)	YSAQMD (Tons/yr)
NO_x	54	--	85	--	--	10
ROG	54	--	--	--	--	10
PM_{10}	82*	--	80	14.6	80	--
$PM_{2.5}$	54*	--	82	15	--	--

Table 5.3-5. Operational Air Quality Thresholds of Significance

Pollutant/ Precursor	BAAQMD (lbs/day)	BAAQMD (Tons/yr)	SMAQMD (lbs/day)	SMAQMD (Tons/yr)	YSAQMD (lbs/day)	YSAQMD (Tons/yr)
NOx	54	10	65	--	--	10
ROG	54	10	65	--	--	10
PM10	82	15	80	14.6	80	--
PM2.5	54	10	82	15	--	--

5.3.3 Impact Analysis

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

The primary sources of criteria pollutant emissions from the Project would be diesel-powered internal combustion engines used during construction-phase drilling activities and field gas-fired compressors used during the operational phase.

Construction equipment such as backhoes, cranes, excavators, forklifts, generators, graders, loaders, pumps, water trucks, and drill rigs would be used during construction activities (Section 2.4). Additional sources of air pollutant emissions for the construction and operational phase of the Project would include emissions from on-road motor vehicles used to transport materials and personnel and fugitive dust emissions from activities involving soil disturbances, and fugitive dust from travel on paved roads, unpaved roads and tire wear.

Applicable air quality plans for the Project area include the BAAQMD, SMAQMD, and YSAQMD air quality plans. These plans are intended to achieve and maintain compliance with applicable federal and state ambient air quality standards through emission reduction strategies and control measures.

These factors were sourced from the CARB's California Emissions Estimator Model (CalEEMod) User's Guide, Appendix D: Default Data Tables (Trinity, 2021), the CalEEMod 2022 User Guide Appendix G (CARB, 2022), and the U.S. EPA's AP-42: Compilation of Air Emissions Factors from Stationary Sources (U.S. EPA, 2024). Emissions associated with worker commutes and truck traffic were estimated using CARB's 2021 Emission Factor Model (EMFAC2021) (CARB, 2025a). Emissions of TOCs and VOCs from oil well components during the operational phase were calculated using emission factors from the U.S. EPA's *Protocol for Equipment Leak Emission Estimates* (U.S. EPA, 1995). A detailed tabulation of assumptions, references, and calculation methodologies used for the Project's emission estimates is provided in Appendix C.

As discussed under Threshold (b), the Project would result in exceedances of applicable NOx significance thresholds during construction and operation. However, implementation of Mitigation Measure (MM) AQ-1 and MM AQ-2 would reduce and offset Project-related NOx emissions through implementation of emission control measures and procurement of Emission Reduction Credits (ERCs) from the applicable air districts. Therefore, the Project would not conflict with or obstruct implementation of applicable air quality plans. This impact would be less than significant with mitigation.

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?

Maximum annual emissions expected from Project construction and operational activities, based on the current schedule and equipment list provided by CRPC, are summarized in Tables 5.3-6 through 5.3-9[5] below. Emissions calculations and a detailed summary of these emissions are provided in Appendix C.

Table 5.3-6. Estimated Peak Daily Construction Criteria Pollutant Emissions

Work Task	Units	NO_x	ROG	PM_{10}*	$PM_{2.5}$*	CO	SO_2
BAAQMD Emissions							
Year 1	lbs/day	85.8	10.9	1.61	1.61	407	0.908
Maximum Project	**lbs/day**	**85.8**	**10.9**	**1.61**	**1.61**	**407**	**0.908**
SMAQMD Emissions							
Year 1	lbs/day	86.7	10.9	8.41	2.77	407	0.923
Year 2	lbs/day	86.7	10.9	8.41	2.77	407	0.923

Work Task	Units	NO_x	ROG	PM_{10}*	$PM_{2.5}$*	CO	SO_2
Year 3	lbs/day	4.22	0.958	4.96	0.83	36.0	0.082
Maximum Project	**lbs/day**	**86.7**	**10.9**	**8.4**	**2.77**	**407**	**0.923**
YSAQMD Emissions							
Year 1	lbs/day	86.0	10.9	7.65	2.56	407	0.912
Year 2	lbs/day	86.0	10.9	7.65	2.56	407	0.912
Year 3	lbs/day	86.0	10.9	7.65	2.56	407	0.912
Maximum Project	**lbs/day**	**86.0**	**10.9**	**7.65**	**2.56**	**407**	**0.912**

Notes: * - PM emissions for the SMAQMD and YSAQMD include fugitive dust emissions from travel on unpaved roads, paved roads and tire wear. BAAQMD PM emissions only include exhaust emissions. Underlined text indicates emissions that exceed air district thresholds.

Table 5.3-7. Estimated Construction Yearly Air Pollutant Emissions

Work Task	Units	NO_x	ROG	PM_{10}*	$PM_{2.5}$*	CO	SO_2
BAAQMD Emissions							
Year 1	tons/yr	7.82	1.01	0.148	0.148	37.7	0.084
Total Project	**tons/yr**	**7.82**	**1.01**	**0.148**	**0.148**	**37.7**	**0.084**
SMAQMD Emissions							
Year 1	tons/yr	7.83	1.00	0.43	0.192	37.3	0.084
Year 2	tons/yr	12.9	1.64	0.508	0.289	61.4	0.138
Year 3	tons/yr	0.171	0.037	0.061	0.014	1.54	0.003
Total Project	**tons/yr**	**20.9**	**2.68**	**1.00**	**0.495**	**100**	**0.225**
YSAQMD Emissions							
Year 1	tons/yr	8.43	1.08	0.490	0.196	40.4	0.090
Year 2	tons/yr	8.44	1.08	0.365	0.192	40.5	0.090
Year 3	tons/yr	8.50	1.09	0.419	0.200	41.1	0.091
Total Project	**tons/yr**	**25.4**	**3.25**	**1.20**	**0.587**	**122**	**0.272**

Notes: * - PM emissions include fugitive dust emissions from travel on unpaved roads, paved roads and tire wear. Underlined text indicates emissions that exceed air district thresholds.

As shown in Table 5.3-6, the daily BAAQMD NO_x threshold of 54 lbs/day in Year 1and the daily SMAQMD NO_x threshold of 85 lbs/day during Year 1 and Year 2 were exceeded. The NO_x exceedance within the BAAQMD totals approximately 2.8 tons/year above the threshold. In the SMAQMD, the NO_x exceedance over the threshold is approximately 0.153 tons/year in Year 1 and 0.255 tons/year in Year 2. No other criteria pollutant emissions thresholds were exceeded.

Emissions resulting from Project construction equipment would temporarily increase local pollutant concentrations.

Table 5.3-8. Estimated Peak Daily Operational Criteria Pollutant Emissions

AQMD	Units	NOx	ROG	PM10*	PM2.5*	CO	SO2
BAAQMD Emissions	lbs/day	25.5	5.09	9.51	3.08	21.4	0.153
SMAQMD Emissions	lbs/day	38.2	12.6	10.5	4.06	32.1	0.230
YSAQMD Emissions	lbs/day	89.2	8.59	14.4	7.93	74.9	0.535

Notes: * PM emissions include fugitive dust emissions from travel on unpaved roads, paved roads and tire wear.

Table 5.3-9 Estimated Yearly Operational Criteria Pollutant Emissions

AQMD	Units	NO_x	ROG	PM_{10}*	$PM_{2.5}$*	CO	SO_2
BAAQMD Emissions	tons/yr	4.65	0.928	0.550	0.383	3.91	0.028

AQMD	Units	NO_x	ROG	PM_{10}*	$PM_{2.5}$*	CO	SO_2
SMAQMD Emissions	tons/yr	6.97	2.30	0.728	0.560	5.86	0.042
YSAQMD Emissions	tons/yr	16.3	1.57	1.43	1.27	13.7	0.098

Notes: * PM emissions include fugitive dust emissions from travel on unpaved roads, paved roads and tire wear.
Underlined text indicates emissions that exceed air district thresholds.

As shown in Table 5.3-9, the Project is estimated to exceed the YSAQMD's annual NO_x emissions threshold of 10 tons per year. The projected exceedance is approximately 6.3 tons per year above the threshold.

Construction-related NO_x emissions are estimated to exceed the daily significance thresholds established by both BAAQMD and the SMAQMD, resulting in a significant air quality impact without mitigation. Similarly, NO_x emissions from the proposed operational phase are estimated to exceed the YSAQMD operational significance threshold, also constituting a significant impact without mitigation. As a result, implementation of **Mitigation Measure (MM) AQ-1** and **MM AQ-2** would reduce and offset Project-related NO_x emissions to a less than significant level.

MM AQ-1: Implement Basic Construction Emissions Control Practices and Best Management Practices.

Prior to construction activities, CRPC shall prepare and submit a Fugitive Dust Control and Emissions Compliance Plan to CalGEM and applicable air districts for review. The plan shall identify the procedure, responsible personnel, monitoring methods, and documentation protocols that will be used to implement the following measures during construction:

- Water all exposed surfaces twice daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Wet power vacuum street sweepers shall be used to remove any visible track-out of mud or dirt from adjacent public roads at least once daily. The sweeping schedule will be determined by CRPC personnel, considering site conditions and work requirements.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

- Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel.
- Limit vehicle speeds on unpaved roads to 15 miles per hour. This speed limit will be discussed during daily tailgate meetings and posted as needed.
- Pave all roadways, driveways, sidewalks, and parking lots as soon as possible. Similarly, building pads should be completed promptly after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph as forecasted by the National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS) website https://www.weather.gov/.
- Publicly visible signs shall be posted displaying the name and telephone number of the lead agency contact for dust complaints. This contact person shall respond and initiate corrective action within 48 hours. The appropriate Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrances to the project site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation to CalGEM and applicable air districts upon request **(RR AQ-1)**.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. Records of equipment conditions will be recorded and retained records will be stored for up to three years.

MM AQ-2: Construction and Operations Phase Mitigation Measures – Emissions Reduction Credits: CRPC will procure ERCs from the BAAQMD and SMAQMD to cover the construction NO_x exceedances in accordance with each district's rules **(RR AQ-3; RR AQ-4)**. In addition, CRPC will purchase ERCs from the YSAQMD to cover the operational NO_x exceedances in accordance with YSAQMD rules **(RR AQ-2)**.

Inventory/receipt of payment shall be submitted to CalGEM to demonstrate the purchase of ERCs.

While NO_x emissions during the construction and operational phases were estimated to exceed significance thresholds (Appendix C), the implementation of **MM AQ-2** would offset these emissions. As a result, the Project would not result in a net increase in criteria pollutant emissions within the SFBAAB or SVAB, would not conflict with any air quality plans, and would not conflict with or obstruct implementation of any attainment plans such as the BAAQMD's Final 2017 CAP (BAAQMD, 2017), (SMAQMD, 2017) and (SMAQMD, 2023a). Therefore, with mitigation, the Project's impact on air quality would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact with Mitigation. With the exception of NO_x, all construction-related criteria pollutant emissions were estimated to remain below their respective significance thresholds and are therefore not expected to expose sensitive receptors to substantial pollutant concentrations. However, construction-related NO_x emissions are estimated to exceed significance thresholds in both the BAAQMD and SMAQMD. These elevated emissions are primarily associated with drilling operations, which would utilize a U.S. EPA Tier 4 800 horsepower drilling rig and three U.S. EPA Tier 3 450 horsepower generators. Drilling activities are temporary in nature, expected to last approximately 6 months within the BAAQMD and 16 months within the SMAQMD, and would be primarily confined to the immediate vicinity of the proposed well pads.

With the exception of NO_x, all operational-related criteria pollutant emissions were estimated to remain below their respective significance thresholds. However, operational NO_x emissions resulting from the combustion of field gas to power the compressors are estimated to exceed the NO_x significance threshold established by the YSAQMD. The compressors are expected to consume approximately 125 thousand cubic feet (Mcf) of field gas per day and operate continuously, 365 days per year.

The Project site is located in a sparsely populated rural area. Within the BAAQMD, the nearest sensitive receptor, a single-family residence, is located approximately 0.70 miles southeast[6] of proposed well pad CC-1. Within the SMAQMD, the closest sensitive receptor, a single-family residence, is located about 0.63 miles southeast of the proposed well pad SAC-SH-1. Within the YSAQMD, the closest sensitive receptor, two residences, are located about 0.61 miles north and southwest of the proposed well pad SOL-2 Alt and well pad SOL-3. Additional nearby receptors within all three air districts are also single-family

[6] The distances to nearest sensitive receptors were estimated by reviewing publicly available Contra Costa, Sacramento and Solano County GIS database, aerial photographs and city/county maps.

residential homes, located between approximately 0.64 miles to approximately 0.85 miles from the Project area (nearest well pad perimeter). The nearest urban area to the Project site is the City of Rio Vista, located approximately 0.89 miles to the southeast of proposed well pad SOL-3 within the YSAQMD.

As indicated in **MM AQ-2** discussed in the section above CRPC will procure ERCs to cover the NO_x emissions that exceed the significance thresholds during construction and operations. These ERCs will be used by the respective air districts to reduce NO_x emissions within their jurisdictions, thereby offsetting the Project's NO_x emissions and minimizing the potential exposure of sensitive receptors to substantial pollutant concentrations and health risk from NO_x **(RR AQ-2, RR AQ-3, RR AQ-4)**.

PM_{10} and $PM_{2.5}$ emissions from construction and operation were estimated to be below significance thresholds in all three air districts; therefore, DPM[7] emissions are not expected to pose a health risk to sensitive receptors.

Due to the temporary nature of construction activities, the sparse population in the Project area, and CRPC's use of ERCs to offset NO_x emissions exceeding significance thresholds during both construction and operation, the impact of NO_x emissions would be considered less than significant. Therefore, no additional mitigation measures would be required.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. Heavy-duty construction equipment used during Project activities may generate localized odors. However, these construction activities would be short-term in duration and would cease upon completion. The nearest residential receptors are located approximately 0.61 to 0.70 miles from the proposed construction and operational areas. Additionally, the natural gas in the Project field is classified as "sweet gas," containing little to no hydrogen sulfide (H_2S), which is a common source of odor (API, 1988). Given the distance to sensitive receptors and the low H_2S content, it is unlikely that odors generated by the Project would be perceptible or impact a substantial number of people. As such, potential odor-related effects related to the construction and operational phase of the Project would be considered less than significant, and no mitigation would be required.

5.3.4 Mitigation Measures

Implementation of the following measures would reduce air quality impacts as a result of the Project to a less than significant level:

[7] For a conservative estimate, DPM is assumed to include all PM_{10} or smaller diameter diesel exhaust emissions.

- MM AQ-1: Implement Basic Construction Emissions Control Practices and Best Management Practices
- MM AQ-2: Construction and Operations Phase Mitigation Measures – Emissions Reduction Credits

5.4 BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐

BIOLOGICAL RESOURCES – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

A biological resources evaluation was completed for the Project by Mesa Biological, LLC (Mesa) in 2025, which included a comprehensive literature review and results of reconnaissance-level field surveys of the Project area (i.e., well pad/access road components and pipelines) and a surrounding 250-ft survey buffer to assess the surrounding habitat based on commonly applied biological survey standards for adjacent habitats and resources that could be indirectly affected by Project activities. This evaluation was conducted to assess potential Project impacts on biological resources associated with the Project area. Additional surveys for special status species and aquatic resources are proposed as mitigation measures and are planned to occur in the appropriate season prior to the permitting process and/or Project approval (refer to Section 5.4.3).

The following environmental setting information and impact analysis was developed based on the field survey and desktop review results, discussion, and impact analysis from the Project biological resource evaluation (Mesa, 2025), which is included as Appendix E.

5.4.1 Environmental Setting

The Project is located within the Rio Vista Gas Field, which spans a portion of the Sacramento-San Joaquin River Delta and the eastern Montezuma Hills. The total proposed Project footprint, including temporary and permanent disturbance areas, is 141 acres. Within the entire 141-acre Project footprint, the Project would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance for pipeline installation and permanent conversion of approximately 25.4 acres of vegetated habitat/agricultural land for well pad/access road components. The Project area land uses include agricultural, open space, rural residential, and industrial development; Project

parcels are zoned primarily for agricultural use by their respective county general plans (Sacramento County, 2019; Solano County, 2008; Contra Costa County, 2024a). The Project area land is intersected by the Sacramento River, San Joaquin River, and various sloughs. The proposed Solano County wells are located in the eastern Montezuma Hills, west and southwest of the City of Rio Vista; the proposed Sacramento County wells are located on Brannan, Twitchell, and Sherman Islands between the Sacramento and San Joaquin Rivers; and the proposed Contra Costa County wells are located on Bradford Island south of the San Joaquin River.

Field surveys were completed over a six-day period in March 2025. Surveys were conducted within the appropriate seasonal window for some potentially occurring sensitive species, but not all species identified. For the species whose optimal survey window was not met, habitat assessments and professional judgement were used to evaluate potential presence. Prior to field surveys, the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants queries were reviewed to identify occurrences of special status plant and animal species in the Project vicinity (CDFW 2025; CNPS 2025). The survey methodologies included a combination of pedestrian transects and stationary observation points to systematically document plant and animal species. Throughout the survey, each habitat type, land use, and land cover were recorded. Species observations were logged, noting species abundance, distribution, and potential behaviors such as foraging, nesting, and breeding. Special attention was given to identifying sensitive, threatened, or endangered species, as well as any critical habitats that may require conservation measures. Refer to Sections 5.4.1.4 and 5.4.1.5 below for details regarding the potential for sensitive habitats, wildlife, and wetlands within the Project area.

The Montezuma Hills, the City of Rio Vista, Brannan Island, Sherman Island, Twitchell Island, and Bradford Island, located within California's Sacramento–San Joaquin River Delta region, exhibit a diverse range of land uses and land cover types. The Montezuma Hills are characterized by rolling terrains used for dryland farming, sheep grazing, and wind energy production, with numerous wind turbines benefiting from favorable wind conditions. Brannan Island features the Brannan Island State Recreation Area, comprising waterways, islands, and marshes that provide habitats for wildlife and recreational opportunities like boating, fishing, and camping. Sherman Island is primarily used for pastureland and agricultural activities, including the cultivation of corn, grains, and alfalfa, while also supporting wetland restoration projects to enhance wildlife habitats and recreational uses. Twitchell Island, traditionally agricultural, has shifted toward wetland restoration and subsidence reversal, with notable initiatives such as a 15-acre pilot wetland, a 600-acre rice research facility, and a 750-acre

restored wetland aimed at rebuilding soil levels. Bradford Island, a reclaimed peat wetland, remains predominantly agricultural, supporting wheat farming, cattle grazing, and natural gas extraction as part of the Rio Vista Gas Field. Collectively, these regions form a complex mosaic of agricultural, energy, recreational, and conservation land uses, contributing significantly to the ecological and economic fabric of the Delta (Mesa, 2025).

The following sections include further details on the land uses and vegetation communities present in the Project area within Solano, Sacramento, and Contra Costa counties.

5.4.1.1 Solano County

The Project area in Solano County is located in the eastern Montezuma Hills and is characterized by a mix of land uses and land cover types. Project parcels within Solano County are zoned by the Zoning Code (Chapter 28 of the Solano County Code) as Exclusive Agriculture with a minimum parcel size of 160 acres (A-160) (Solano County, 2024). Agricultural activities dominate the landscape, with farming, crop production, and livestock grazing being the primary practices. The land cover primarily consists of cultivated fields, fallow grasslands, and actively farmed croplands (Mesa, 2025).

Vegetation communities in the Solano County Project area are typical of disturbed agricultural environments, dominated by non-native annual grasses and forbs, including brome grasses (*Bromus* spp.), mustards (*Brassica* spp.), and forbs such as red-stem fillaree (*Erodium cicutarium*). Areas of less altered grassland also occur in the region. Some areas, particularly along drainage channels and low-lying zones, support riparian vegetation composed of species such as willows and cottonwoods. Additionally, the landscape features existing wind energy infrastructure, with wind turbines scattered throughout the surrounding area (Mesa, 2025).

Based on the results of Mesa's 2025 field surveys, all six proposed drilling pad locations in Solano County are situated within areas previously disturbed by historical agricultural use. Signs of past cultivation, including visible furrow lines, were documented at several sites during the field surveys. Some locations remain actively managed for crop production, while others have been left fallow and are currently used for livestock grazing. Observations during surveys revealed very little evidence of small fossorial species, aside from occasional California ground squirrels and gophers, suggesting that habitat suitability for most fossorial wildlife species is limited across the Solano County Project area (Mesa, 2025). The Project area within Solano County does not overlap with Prime Farmland or Farmland of Statewide Importance with the Farmland Mapping and Monitoring Program (DOC, 2024) but does overlap with approximately 20 acres total of "Nonprime" Williamson Act land (DOC, 2025a), refer to Section 5.2 and Figure 5.2-1 for details.

Refer to Figure 3-1 for representative photographs of the Solano County well pad/access road components. Descriptions of each well pad/access road component can be found in Appendix E.

5.4.1.2 Sacramento County

Brannan Island, Twitchell Island, and Sherman Island, located within the Sacramento-San Joaquin River Delta in Sacramento County, are characterized by a mix of agricultural, conservation, and restoration land uses, and the Project area within Sacramento County is located within land designated as Agricultural Crop Land by the Sacramento County General Plan (Sacramento County, 2022). A significant portion of Brannan, Twitchell, and Sherman Islands are also designated as "croplands" under the National Vegetation Classification System (NVCS). These croplands are actively cultivated for agricultural production, including grain crops and other row crops, as observed during 2025 field surveys conducted by Mesa. The land has been extensively modified through consistent agricultural practices, including plowing, planting, and harvesting, which have replaced or altered natural vegetation communities. All 10 Sacramento County well pad/access road components are situated within these cropland areas, reflecting the dominant land use across these locations. The Sacramento County Project area overlaps with approximately 17.3 acres of Prime Farmland with the Farmland Mapping and Monitoring Program, refer to Section 5.2 and Figure 5.2-1 for details. A low to non-existent presence of small fossorial species was visually observed within and surrounding the proposed well pads during Mesa's 2025 field surveys. California ground squirrels and gophers were documented as the primary species present, likely due to the continuous agricultural disturbance that reduces suitable habitat for these species (Mesa, 2025).

Refer to Figure 3-1 for representative photographs of the Sacramento County well pad/access road components. Descriptions of each well pad/access road component can be found in Appendix E.

5.4.1.3 Contra Costa County

Bradford Island, located within the Sacramento-San Joaquin River Delta in Contra Costa County, features a mix of land uses, land cover types, and diverse vegetation communities (Mesa, 2025). The island is predominantly characterized by agricultural land use, with crops such as corn, alfalfa, and other row crops being cultivated due to the fertile delta soils. The land cover primarily consists of cultivated fields, interspersed with patches of natural vegetation and levee systems that protect the island from flooding. Vegetation communities include riparian habitats along the levee edges, consisting of willows, cottonwoods, and various grasses that help stabilize the soil. Some areas support wetland vegetation, including tule reeds and cattails, especially in zones near waterways or areas prone to seasonal flooding. Wetlands and waterways, including levees,

within the Project area were visually observed at a reconnaissance level during Mesa's 2025 field surveys; the jurisdictional extent of wetlands was not delineated in the field at this time (refer to Section 5.4.1.5 for details). Additionally, Bradford Island is part of the Rio Vista Gas Field, one of California's major natural gas-producing regions. The island hosts some current gas extraction infrastructure, contributing to its industrial land use alongside agriculture (Mesa, 2025). Existing infrastructure is located on a disturbed equipment pad surrounded by agricultural land and the potentially jurisdictional wetlands of the island (Refer to Figure 2-1; Mesa, 2025).

Refer to Figure 3-1 for representative photographs of the Contra Costa County well pad/access road component. A description of the well pad/access road component can be found in Appendix E.

5.4.1.4 Sensitive Habitats and Special Status Species

Special status species include those species that are state or federally listed as endangered or threatened, species proposed for such listing, candidate species, and state or local species of concern. For the purposes of this analysis, special status species are those species that could be found in the Project area that meet any of the following criteria:

- Listed as endangered or threatened species under the federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] 17.11 [listed animals], 50 CFR 17.12 [listed plants], and various notices in the Federal Register [FR]).
- Species that are candidates for possible future listing as threatened or endangered under FESA (USFWS, 2025).
- Species that are listed or proposed for listing by the state of California as threatened or endangered under the California Endangered Species Act (CESA) (Cal. Code Regs, tit.14 § 670.5).
- Animals listed as fully protected species or California Species of Special Concern on CDFW's Special Animals List (CDFW, 2025).
- Plants listed as rare under the California Native Plant Protection Act (Fish and Game Code 1900 et seq.).
- Plants listed as rare under the California Rare Plant Rank (CRPR) of 1A, 1B, 2A and 2B (CNPS, 2025), and that the scientific community considers threatened or endangered in California.
- Plants designated as CRPR 3 and 4 with a locally significant population that meets the criteria under State CEQA Guidelines, Section 15380, subdivision (d).

- Species considered rare, threatened, or endangered under CEQA Guidelines 15380(d) as the species' survival and reproduction in the wild are in immediate jeopardy, present in such small numbers throughout all or a significant portion of its range that it may become endangered, or likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Key database queries completed for the Project as part of the biological resources evaluation included the California Department of Fish and Wildlife CNDDB, CNPS Inventory of Rare and Endangered Plants, and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (iPac). Additional data sources consulted for the Project also included the CDFW Biogeographic Information and Observation System (BIOS), the USFWS Critical Habitat Portal, the USFWS National Wetlands Inventory (NWI), and the USGS National Hydrography Dataset (NHD) (Mesa, 2025). Full database query results for the Project region are included in Appendix E.

Special Status Plants and Sensitive Habitats

Based on review of the database query results, 57 special status plant species and eight sensitive vegetation communities have the potential to occur within the Project region. No special status plant species were detected within the Project area during the field surveys. Biological surveys were conducted in March 2025, which falls within the optimal blooming period for most of the plant species identified as having potential to occur on the site; however, this timing does not fully capture the blooming periods of all species, particularly those with late spring, summer, or fall flowering periods. Based on the field surveys and habitat assessments, the likelihood of these species occurring in the Project area is significantly reduced due to extensive and ongoing disturbances from historical and current agricultural practices.

The Project area is primarily composed of cultivated lands and previously disturbed soils, which have been subjected to repeated agricultural operations such as soil tilling, crop planting, irrigation, herbicide application, mechanical disturbance, and harvesting of hay. In addition, many of the proposed well pad and access road locations would occur in or expand on areas that currently contain a gravel base (Mesa, 2025). Previous disturbances have significantly altered soil structure, removed native vegetation, disrupted native seed banks, and degraded or eliminated the specific habitat features preferred by many of the identified species. Given the heavily disturbed condition of the Project area and the lack of suitable habitat to support the growth and reproduction of special status plant species, protocol-level botanical surveys were not conducted and are not considered warranted (Mesa, 2025). A full analysis of the species' listing status, habitats, and potential to occur are provided in Attachment D of Appendix E.

Special Status Wildlife

Based on review of the database query results, 76 special status wildlife species have the potential to occur within the Project region. For purposes of this analysis, special status wildlife species include species that are state or federally listed or have a special status designation with CDFW (e.g., Species of Special Concern or Fully Protected). These species were further evaluated to determine whether they have a reasonable potential to occur within the Project footprint based on habitat suitability and known regional distributions. Of the 76 species identified in the database queries, 15 were assessed as having the potential to occur within the Project footprint and were further considered in the impact analysis. Three special status wildlife species were directly observed in the Project area during 2025 field surveys, including burrowing owl (*Athene cunicularia*), northern harrier (*Circus hudsonius*), and white-tailed kite (*Elanus leucurus*), which were observed foraging within or flying over the Project area or surrounding vicinity (Mesa, 2025). No nesting bird activity was observed during 2025 field surveys; however, these and other bird species have the potential to nest within or near the Project area (Mesa, 2025).

In addition to these species observed, several other special status wildlife species have the potential to occur within the Project area based on habitat conditions and regional occurrence data. These species include the northwestern pond turtle (*Actinemys marmorata*), golden eagle (*Aquila chrysaetos*), grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), song sparrow ("Modesto" population) (*Melospiza melodia*), Swainson's hawk (*Buteo swainsoni*), American badger (*Taxidea taxus*), hoary bat (*Lasiurus cinereus*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus frantzii*), Crotch's bumblebee (*Bombus crotchii*), and western bumblebee (*Bombus occidentalis*). These potential occurrence determinations were based on a combination of field observations, habitat evaluations, and review of available regional occurrence databases (Mesa, 2025). A full description of the species' listing status, preferred habitats and potential to occur are provided in Attachment E of Appendix E.

5.4.1.5 Wetlands and Waterways

Potential wetlands and waterways were identified in the Project area during the desktop review, and various wetland habitats were documented in the Project area during reconnaissance-level field surveys; however, the Project biological resources evaluation did not determine state and/or federal jurisdictional status or delineate the extent of wetlands in the Project area (Mesa, 2025). A delineation was not conducted during preparation due to the preliminary nature of the Project design and the current scope and timing of environmental review. Specifically, the impact analysis relied on existing data sources, site reconnaissance, and available mapping (e.g., National Wetlands Inventory and

aerial imagery) to identify potential jurisdictional features at a programmatic level. Given that Project-specific engineering and ground disturbing activities have not yet been finalized, a formal delineation was determined to be more appropriately conducted at a later stage of Project development, when site access, design details, and seasonal conditions are conducive to accurately identifying jurisdictional waters. If the Project proceeds, a formal jurisdictional delineation will be conducted, as necessary, in accordance with U.S. Army Corps of Engineers (USACE) guidelines, and any required permits or approvals (e.g., Clean Water Act Section 404/401, and/or California Fish and Game Code Section 1602) will be obtained prior to the initiation of ground-disturbing activities. Refer to Section 5.4.3 b) and **MM BIO-11** through **MM BIO-14** for details on potential impacts and mitigation for wetlands and waterways. The proposed pipeline between the SAC-SH-1 and CC-1 pads would cross under the San Joaquin River; however, CRPC is proposing to utilize an existing conduit for the river crossing and does not anticipate any impacts to the San Joaquin River habitats or species.

The USFWS NWI (USFWS, 2024) and the USGS NHD (USGS, 2012a; 2012b; and 2022) show several wetlands throughout the Project area (Figure 5.4-1). Table 5.4-1 lists the Project components located within or near these wetlands and approximate temporary and/or permanent wetland impacts. These wetlands may be considered state and/or federal jurisdictional wetlands.

Figure 5.4-1. Wetlands and Waterways of the Project Area

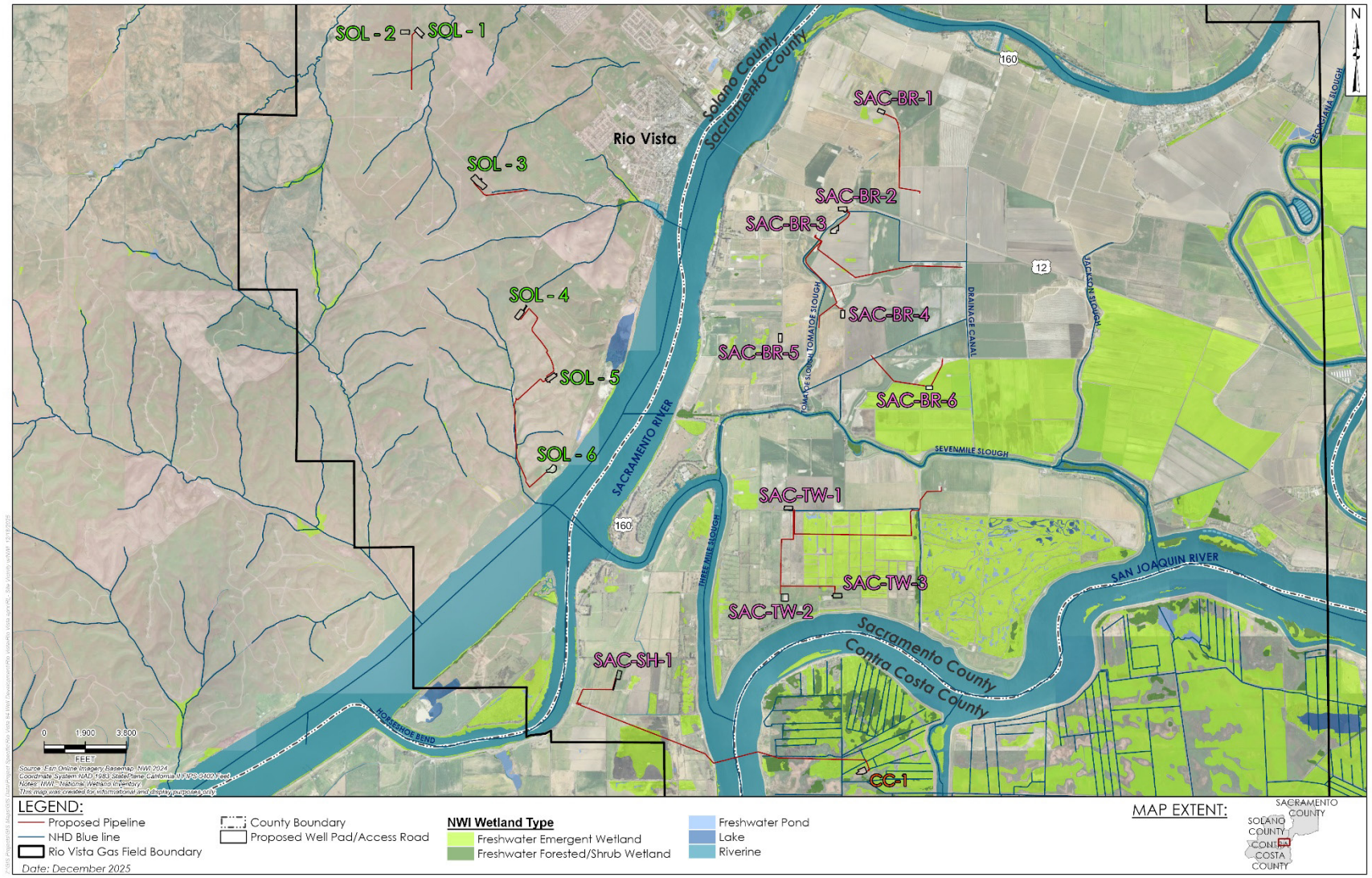


Table 5.4-1. Project Components Within or Near Wetlands and Potential Wetland Impacts

Project Component	Wetland Name (if applicable) and Type (NWI/NHD)[1, 2]	Development Footprint Overlaps Wetland? (Y/N)	Approximate Distance to Wetland (ft)	Approx. Potential Temporary Wetland Impacts (Acres)	Approx. Potential Permanent Wetland Impacts (Acres)
Pipeline SOL-1	Riverine / Stream/River	Y	-	0.03	N/A
Pipeline SOL-3	Riverine / Stream/River	N	5	N/A[3]	N/A[3]
Pipeline SOL-6	Freshwater Emergent Wetland / Stream/River	Y	-	0.64	N/A
Pipeline SAC-BR-2	Tomato Slough	Y (crosses Tomato Slough at existing road crossing)	-	N/A[4]	N/A[4]
Pipeline Big Brannan to TB Chiller	Tomato Slough; Freshwater Emergent Wetland / Slough	Y (crosses Tomato Slough at existing road crossing)	- / -	N/A[4]	N/A[4]
Pipeline Big Brannan to TB Chiller	Unnamed Freshwater Emergent Wetland	Y	-	0.29	N/A
Pipeline Big Brannan	Tomato Slough; Freshwater Emergent Wetland and Riverine / Slough	Y (crosses Tomato Slough at existing road crossing)	-	N/A[4]	N/A4
SAC-BR-6 Well Pad/	Unnamed Freshwater	Y	-	N/A	0.3

Project Component	Wetland Name (if applicable) and Type (NWI/NHD)[1, 2]	Development Footprint Overlaps Wetland? (Y/N)	Approximate Distance to Wetland (ft)	Approx. Potential Temporary Wetland Impacts (Acres)	Approx. Potential Permanent Wetland Impacts (Acres)
Access Road	Emergent Wetland				
Pipeline SAC-BR-6 (1)	Unnamed Freshwater Emergent Wetland	Y	-	3.8	N/A
Pipeline SAC-BR-6 (1)	Unnamed Riverine / Drainage Canal	Y	-	0.06	N/A
Pipeline SAC-BR-6 (2)	Unnamed Freshwater Emergent Wetland	Y	-	1.9	N/A
SAC-TW-1 Well Pad/ Access Road	Unnamed Riverine / Drainage Canal	N	5	N/A[3]	N/A[3]
Pipeline SAC-TW-1	Seven Unnamed Freshwater Emergent Wetlands	Y	-	6.9	N/A
Pipeline SAC-TW-1	Unnamed Riverine, Freshwater Forested/ Shrub Wetland, and Freshwater Emergent Wetland / Drainage Canal	Y (crosses at existing road crossing)	-	N/A[4]	N/A[4]

Project Component	Wetland Name (if applicable) and Type (NWI/NHD)[1, 2]	Development Footprint Overlaps Wetland? (Y/N)	Approximate Distance to Wetland (ft)	Approx. Potential Temporary Wetland Impacts (Acres)	Approx. Potential Permanent Wetland Impacts (Acres)
Pipeline SAC-TW-2	Unnamed Riverine / Drainage Canal	Y	-	0.05	N/A
Pipeline SAC-TW-3	Unnamed Freshwater Emergent Wetland	Y	-	0.4	N/A
Pipeline SAC-TW-3	Unnamed Freshwater Emergent Wetland	N	5	N/A[3]	N/A[3]
Pipeline SAC-TW-3	Unnamed Freshwater Forested/ Shrub Wetland	N	14	N/A[3]	N/A[3]
CC-1 Well Pad/ Access Road	Unnamed Freshwater Emergent Wetland	N (well pad boundary is right on border of wetland)	0	N/A[3]	N/A[3]
Pipeline CC-1	2 Unnamed Freshwater Emergent Wetlands (Bradford Island in Contra Costa County)	Y	-	3.7	N/A
Pipeline CC-1	Unnamed Freshwater Forested/ Shrub Wetland	Y	-	0.8	N/A

Project Component	Wetland Name (if applicable) and Type (NWI/NHD)[1, 2]	Development Footprint Overlaps Wetland? (Y/N)	Approximate Distance to Wetland (ft)	Approx. Potential Temporary Wetland Impacts (Acres)	Approx. Potential Permanent Wetland Impacts (Acres)
Pipeline CC-1	2 Unnamed Freshwater Emergent Wetlands (Sherman Island in Sacramento County)	Y	-	2.3	N/A
TOTAL	**-**	**-**	**-**	**20.8**	**0.3**

[1] USFWS, 2024

[2] USGS, 2012a; 2012b; and 2022

[3] Project footprint is adjacent to wetland boundary but does not overlap: no temporary or permanent impacts.

[4] Project footprint crosses wetland at existing road crossing: no temporary or permanent impacts.

5.4.2 Regulatory Setting

Federal, state, and local regulations, laws, rules, policies, or other mandatory guidance from a lead or responsible agency pertaining to biological resources are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.4.2.1 Federal

Federal Endangered Species Act (FESA) (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.). The FESA, which is administered in California by the USFWS and National Marine Fisheries Service (NMFS), provides protection to species listed as threatened or endangered, or proposed for listing as threatened or endangered. When applicants propose projects with a federal nexus that "may affect" a federally listed or proposed species, the federal agency must (1) consult with the USFWS or NMFS, as appropriate, under Section 7, and (2) ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of areas determined to be critical habitat.

Section 9 prohibits the "take" of any member of a listed species.

- **Take** – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.
- **Harass** – An intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering.
- **Harm** – Significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.

Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 et seq.). The MBTA makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated under the MBTA.

Federal Noxious Weed Act (P.L. 93-629). The Federal Noxious Weed Act establishes a federal program to control the spread of noxious weeds. Authority is given to the Secretary of Agriculture to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit.

Bald and Golden Eagle Protection Act (16 U.S.C. § 668 et seq.). The Bald and Golden Eagle Protection Act declares it is illegal to take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export or import a bald or golden eagle, alive or dead, or any part, nest or egg of these eagles unless authorized. Active nest sites are also protected from disturbance during the breeding season.

Clean Water Act (CWA) (33 U.S.C. §§ 1251 et seq.). The CWA regulates certain discharges to waters of the United States through various permitting and regulatory programs. Section 404 requires authorization for the discharge of dredged or fill material into waters of the United States, including wetlands, unless an exemption applies. The U.S. Army Corps of Engineers (USACE) generally administers the Section 404 permitting program.

Section 401 requires a water quality certification from the state or authorized Tribe for a federal permit or license for an activity that may result in a discharge into waters of the United States. In California, the appropriate Regional Water Quality Control Board (RWQCB) generally serves as the certifying authority. The federal agency may not issue the federal permit or license unless the Section 401 certification has been obtained or waived.

Rivers and Harbors Act (33 U.S.C. § 403). The Rivers and Harbors Act requires a permit or letter of permission from USACE prior to any work being completed within navigable waters. Section 10 of the Act requires USACE to issue permits for construction, dumping, and dredging in navigable waters as well as

construction of piers, wharves, weirs, jetties, outfalls, aids to navigation, docks, and other structures **(RR HYDRO-3)**.

5.4.2.2 State

California Endangered Species Act (CESA) (Fish & G. Code, §§ 2050 et seq.). The CESA provides for the protection of rare, threatened, and endangered plants and animals and prohibits the taking of such species without authorization. "Take" is defined as to hunt, pursue, catch, capture, kill, or attempt to any of these actions (Fish & G. Code, § 86). Furthermore, the CESA provides protection for species that are designated as candidates for threatened or endangered listings. Under the CESA, the CDFW has the responsibility for maintaining a list of threatened species and endangered species (Fish & G. Code, § 2070). CDFW also maintains a list of candidate species, which are species that the CDFW has formally noticed as under review for addition to the threatened or endangered species lists. The CDFW also maintains lists of Species of Special Concern that serve as watch lists. Pursuant to CESA requirements, an agency reviewing a proposed Project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the Project area and determine whether the proposed Project will have a significant impact on such species. The CDFW encourages informal consultation on any proposed Project that may affect a candidate species. The CESA also requires a permit to take a state-listed species through incidental or otherwise lawful activities (Fish & G. Code, § 2081, subd. (b)).

Porter-Cologne Water Quality Control Act (Water Code §§ 13000 et seq.). The Porter-Cologne Water Quality Control Act requires that each of the nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards.

Protection of Birds and Nests (Fish and G. Code §§ 3503 and 3503.5). It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Raptors, including hawks and owls, are specifically protected under these provisions.

Migratory Birds (Fish and G. Code § 3513). It is unlawful to take or possess any migratory nongame bird as designated under the MBTA or any part of such migratory nongame birds.

Fully Protected Species (Fish and G. Code §§ 3511, 4700, 5050, and 5515). These provisions identify and protect certain amphibian, reptile, fish, bird, and mammal species that are fully protected. Except as provided by law, CDFW may not authorize the take of fully protected species through a permit.

Fur-bearing Mammals (Fish and G. Code §§ 4000 and 4002). Certain fur-bearing mammals are classified as fur-bearing mammals under the Fish and Game Code, and a license or permit may be required for their take.

CEQA Guidelines § 15380 and 15065. CEQA defines "endangered" and "rare" species more broadly than the definitions applicable to species listed under the state and federal Endangered Species Acts. Under Section 15380, species not protected through state or federal listing may nevertheless be considered endangered or rare for purposes of CEQA if they meet the criteria specified in the regulation. Under Section 15065, a project may have a significant effect on the environment if it has a substantial adverse effect, either directly or through habitat modifications, on species identified as endangered, rare, or threatened. Accordingly, species that meet the criteria under Section 15380 should be considered in the environmental analysis. This may include certain plants considered rare by the California Native Plant Society and certain animals identified on CDFW's Special Animals List.

Lake and Streambed Alteration Agreement (Fish and G. Code § 1600 et seq.). This policy regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process **(RR BIO-1)**.

California Desert Native Plants Act (Food and Agric. Code § 80001 et seq. and Fish and G. Code §§ 1925 and 1926). The California Desert Native Plants Act protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.

Noxious Weeds and Agricultural Pests (Food and Agric. Code § 403). California Department of Food and Agriculture is designated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds.

Noxious Weeds (Cal. Code Regulations, Tit. 3, § 4500). List of plant species that are considered noxious weeds.

5.4.2.3 Local

Solano County General Plan (2008)

Chapter 4: Resources

Biological Resources

- **Policy RS.P-1:** Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special status species, wetlands, sensitive natural communities, and habitat connections. Actions to enhance or restore habitat areas should not cause adverse impacts to airports, including Travis Air Force Base.
- **Policy RS.P-2:** Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.
- **Policy RS.P-3:** Focus conservation and protection efforts on high-priority habitat areas depicted in Figure RS-1.
- **Policy RS.P-4:** Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.
- **Policy RS.P-5:** Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.
- **Policy RS.P-6:** Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way.

Marsh and Delta Areas

General Marsh-Delta Policies:

- **Policy RS.P-7:** Preserve and enhance the diversity of habitats in marshes, delta to maintain these unique wildlife resources.
- **Policy RS.P-8:** Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.

Sacramento County General Plan (2011)

Conservation Element

Section V: Vegetation and Wildlife

Habitat Protection and Management

- **Policy CO-58:** Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.
- **Policy CO-59:** Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:

  - Vernal pools,
  - Wetlands,
  - Riparian,
  - Native vegetative habitat, and
  - Special status species habitat

- **Policy CO-60:** Mitigation should be directed to lands identified on the Open Space Vision Diagram and associated component maps (please refer to the Open Space Element).
- **Policy CO-61**: Mitigation should be consistent with Sacramento County-adopted habitat conservation plans.
- **Policy CO-62:** Permanently protect land required as mitigation.

Habitat Protection and Project Review

- **Policy CO-71:** Development design shall help protect natural resources by:
  - Minimizing total built development in the floodplain, while designing areas of less frequent use that can support inundation to be permitted in the floodplain,
  - Ensuring development adjacent to stream corridors and vernal pools provide, where physically reasonable, a public street paralleling at least one side of the corridor with vertical curbs, gutters, foot path, street lighting, and post and cable barriers to prevent vehicular entry.
  - Projects adjacent to rivers and streams shall integrate amenities, such as trail connectivity, that will serve as benefits to the community and ecological function.
  - Siting of wetlands near residential and commercial areas should consider appropriate measures to minimize potential for mosquito habitation.
  - Development adjacent to steam corridors and vernal pools shall be designed in such a manner as to prevent unauthorized vehicular entry into protected areas.
- **Policy CO-74:** Evaluate feasible on-site alternatives early on in the planning process and prior to the environmental review process that reduce impacts on wetland and riparian habitat and provide effective on-site preservation in terms of minimum management requirements, effective size, and evaluation criteria.

Special Status Species and Their Respective Habitats

- **Policy CO-75:** Maintain viable populations of special status species through the protection of habitat in preserves and linked with natural wildlife corridors.

Rivers and Streams

- **Policy CO-89:** Protect, enhance and maintain riparian habitat in Sacramento County.
- **Policy CO-90:** Increase riparian woodland, valley oak riparian woodland and riparian scrub habitat along select waterways within Sacramento County.
- **Policy CO-91:** Discourage introductions of invasive non-native aquatic plants and animals.
- **Policy CO-92:** Enhance and protect shaded riverine aquatic habitat along rivers and streams.
- **Policy CO-93:** Discourage fill in the 100-year floodplain (Please also refer to CO-117).
- **Policy CO-94:** Development within the 100-year floodplain and designated floodway of Sacramento streams, sloughs, creeks or rivers shall be:
    - Consistent with policies to protect wetlands and riparian areas; and
    - Limited to land uses that can support seasonal inundation.
- **Policy CO-95:** Development within the 100-year floodplain should occur in concert with the development of the Floodplain Protection Zone (please refer to Land Uses Adjacent to Rivers and Streams for information on this Zone).
- **Policy CO-101:** Stabilize the banks of rivers and streams in a manner that increases flood protection and increases riparian habitat functions.
- **Policy CO-102:** Promote and encourage habitat restoration efforts on and adjacent to our river floodways.
- **Policy CO-114:** Protect stream corridors to enhance water quality, provide public amenities, maintain flood control objectives, preserve and enhance habitat, and offer recreational and educational opportunities.
- **Policy CO-115:** Provide setbacks along stream corridors and stream channels to protect riparian habitat functions.

- A functional setback of at least 100 feet and measured from the outside edge of the stream bank should be retained on each side of a stream corridor that prohibits development or agricultural activity. This buffer is necessary to protect riparian functions by allowing for the filtering of sediment, pesticides, phosphorus and nitrogen, organic matter and other contaminates that are known to degrade water quality. This buffer also provides for the protection of vegetation along the stream bank which provides bank stability, erosion control and flood attenuation.
- A transitional setback of at least 50 feet in width beyond the functional buffer should be retained along all stream corridors. This buffer is necessary to protect hydrogeomorphic functions that regulate water temperature, regulate microclimate, maintain channel complexity and retain hydrologic flow regimes. This buffer also provides corridors to facilitate the movement of wildlife.
- An extended setback of at least 50 feet in width beyond the transitional setback should be retained along all stream corridors. This setback will allow for recreational uses such as bike, pedestrian and/or equestrian trails and will allow for the placement of infrastructure such as water and sewer lines.
- Stormwater discharge ponds or other features used for improving stormwater quality may be located within the extended or transitional setback area. However, in order to protect stream habitat and floodplain value, the width of the setback shall not be based upon the width of the pollutant discharge pond. The ponds shall be landscaped and maintained with vegetation native to the surrounding area. Detention ponds or other features implementing pollutant discharge requirements, other than approved regional stormwater quality practices that are designed and operated to complement the corridor functionally and aesthetically, are prohibited.
- Setback averaging within individual development projects or as otherwise specified in a County-adopted master plan will be permitted except when riparian woodland will be lost. The minimum width of setbacks cannot fall below 50 feet.
- Master drainage plans may provide for other standards that meet the intent of this policy.

- **Policy CO-116:** Encourage filter strips using appropriate native vegetation and substrate along riparian streambanks adjacent to irrigated croplands.
- **Policy CO-118:** Development adjacent to waterways should protect the water conveyance of the system, while preserving and enhancing the riparian habitat and its function.
- **Policy CO-120:** Development projects adjacent to rivers and streams shall provide unencumbered maintenance access.
- **Policy CO-121:** No grading, clearing, tree cutting, debris disposal or any other despoiling action shall be allowed in rivers and streams except for normal channel maintenance, restoration activities, and road crossings.
- **Policy CO-122:** River and stream maintenance should allow natural vegetation in and along the channel to assist in removal of nutrients, pollutants, and sediment and to increase bank stabilization, while minimizing impacts on conveyance.
- **Policy CO-123:** The use of native plant species shall be encouraged on revegetation plans.
- **Policy CO-124.** Maintain and manage rivers and streams to encourage special status species.

Terrestrial Resources

- **Policy CO-133:** Prohibit native vegetative habitat mitigation and/or other public plantings onto incompatible substrates i.e., tree planting in vernal pool hardpan.
- **Policy CO-134:** Maintain and establish a diversity of native vegetative species in Sacramento County.
- **Policy CO-135:** Protect the ecological integrity of California Prairie Habitat.
- **Policy CO-136:** Prohibit the loss of mitigated resource areas.
- **Policy CO-137:** Mitigate for the loss of native trees for road expansion and development consistent with General Plan policies and/or the County Tree Preservation Ordinance.

Contra Costa County General Plan (2024)

Chapter 7: Conservation, Open Space, and Working Lands Element

Ecological Resources and Natural Systems

- **Policy COS-P4.1:** Maintain ecologically significant resource areas in their natural state to the greatest extent possible. Limit development in and near these areas to compatible low intensity uses with adequate provisions to protect sensitive resources, including setbacks around resource areas. Prohibit projects that would lead to fragmentation of ecologically significant resource areas.
- **Policy COS-P4.2:** Support land conservation and restoration consistent with the HCP/NCCP and discourage development in areas where such conservation is planned.
- **Policy COS-P4.3:** Require a biological resources assessment prepared according to state and federal protocols for projects with the potential to impact rare, threatened, endangered, or special status species or their habitat, and implement appropriate mitigation for identified impacts, preferably near the impact and within the county.
- **Policy COS-P4.4:** Protect wildlife migration corridors, including natural and channelized creeks providing habitat in urban settings, and support projects that enhance these areas.
- **Policy COS-P4.5:** Discourage use of fencing that poses risks to wildlife.
- **Policy COS-P4.6:** Require projects impacting Pacific Flyway habitat in the Delta Primary Zone to incorporate mitigation that ensures no net loss of habitat function, including temporal loss. Impacts to Pacific Flyway habitat will be determined based on best available information at the time of environmental review.
- **Policy COS-P4.7:** Require projects near sensitive habitat areas to minimize lighting in general and mitigate light pollution by incorporating best practices for wildlife-friendly lighting.
- **Policy COS-P4.8:** Require appropriately timed, comprehensive floristic and vegetation surveys prepared according to state and federal protocols when development is proposed on land with potentially suitable habitat for special status plant species, sensitive natural plant communities, or locally rare plants, including areas mapped by the California Native Plant Society as Botanical Priority Protection Areas.
- **Policy COS-P4.9:** Require avoidance and protection of sensitive ecological resources not approved for disturbance or removal during project entitlement and require restitution in exceedance of standard mitigation ratios for deliberate or inadvertent damage to these resources.
- **Policy COS-P4.10:** Require majority use of California native plant species in large, landscaped areas in new developments, and require

construction practices that avoid spread of invasive plant species by minimizing surface disturbance; seeding and mulching disturbed areas with certified weed-free native mixes; disinfecting/decontaminating equipment; and using native, noninvasive, drought-resistant species in erosion control plantings.

- **Policy COS-P4.11:** Support preservation, enhancement, and reestablishment of native and sport fisheries. Assist conservation agencies and organizations with identifying and addressing barriers to fish passage and other challenges to fish survival in natural watercourses.
- **Policy COS-P5.1:** Support protection, restoration, and enhancement of wetlands, marshes, sloughs, tidelands, natural watercourses, and riparian corridors, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- **Policy COS-P5.2:** Require public infrastructure and private development projects to preserve, and whenever possible restore and enhance, natural watercourses, floodplains, and riparian habitat.
- **Policy COS-P5.3:** Require avoidance, minimization, and/or compensatory mitigation for development that would impact a wetland, wetland species, or adjacent upland habitat areas. Where feasible, compensation shall be in-kind (i.e., the same type of habitat), provided on-site, and based on a ratio that provides a margin of safety reflecting the expected degree of success and accounting for the relative functions and values of the lost and created wetlands.
- **Policy COS-P5.5:** Acquire deeded development rights to setback areas surrounding wetlands, floodplains, and natural watercourses to ensure preservation of the resource and protect adjacent improvements.
- **Policy COS-P5.8:** Discourage ornamental landscaping within setback areas along natural watercourses and require use of California native plant species when revegetating those areas.
- **Policy COS-P5.10:** Allow encroachments into required setback areas along natural watercourses and wetlands for the purpose of constructing low-impact public improvements or public serving amenities, such as footbridges, trails, and nature viewing areas, provided a qualified biologist confirms that the improvements/amenities are compatible with protection of ecological values.

- **Policy COS-P5.11:** Prohibit direct runoff of pollutants and siltation into marsh, creek, and wetland areas from outfalls serving urban development.
- **Policy COS-P6.1:** Preserve natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations.
- **Policy COS-P6.2:** Encourage planting and propagation of California native trees and habitat-supporting native shrubs, forbs, and grasses throughout the county to enhance the natural landscape, provide shade (especially in riparian areas), sustain wildlife, absorb stormwater, and sequester carbon.
- **Policy COS-P6.3:** Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.
- **Policy COS-P6.4:** Support removal of invasive, non-native trees, shrubs, and grassland weeds, especially those that are ecologically harmful or pose threats to public safety.
- **Policy COS-P6.5:** Encourage revegetation with local or regional ecotypes of native species in areas that were previously converted for agriculture but are no longer in production.
- **Policy COS-P9.4:** Work with the Delta Protection Commission to advise agencies undertaking habitat restoration projects within the Delta Primary Zone of their obligation to comply with California Constitution Article XIII D, Section 4, which requires public projects to continue paying benefit assessments unless the project demonstrates that it would not receive the relevant services.

5.4.3 Impact Analysis

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

Less than Significant Impact with Mitigation. Construction activities, including heavy equipment operation, vegetation removal, ground disturbance, increased human presence, and additional vehicles and equipment on-site have the potential to impact sensitive biological resources within the Project area.

Special Status Plants

Due to the heavily disturbed condition of the Project area observed and documented during 2025 field surveys from ongoing agricultural use, it is unlikely that regional special status plants occur within the Project area (Mesa, 2025). Given the lack of suitable habitat to support their growth and reproduction, along with the absence of nearby occurrences in the CNDDB (i.e., occurrences within approximately one mile of the Project area) (Mesa, 2025), potential impacts to special status plants would be less than significant.

Special Status Wildlife

Three special status wildlife species were directly observed in the Project area during 2025 field surveys, including one burrowing owl, one northern harrier, and one white-tailed kite (Mesa, 2025). In addition, the following 12 special status wildlife species have the potential to occur in the Project area based on habitat suitability and known regional distributions: northwestern pond turtle, golden eagle, grasshopper sparrow, loggerhead shrike, song sparrow ("Modesto" population), Swainson's hawk, American badger, hoary bat, pallid bat, western red bat, Crotch's bumblebee, and western bumblebee.

Implementation of **MM BIO-1** through **MM BIO-3**, along with the species-specific mitigation measures listed below, would reduce impacts to special status wildlife to less than significant. These measures include a worker environmental awareness program to educate Project personnel about sensitive resources, the implementation of specific best management practices during construction, field operations to protect biological resources, pre-activity surveys and monitoring during ground disturbing activities in areas where protected species could occur.

MM BIO-1: Worker Environmental Awareness Program. CRPC shall develop and implement a Worker Environmental Awareness Program (WEAP) for all personnel that may access the Project. A WEAP training shall be conducted for each individual prior to their initial Project access, and annually thereafter until Project completion. Annual updates shall be made to the WEAP training to account for current work areas, type of work, and current observations of special status species and sensitive habitats. The program shall consist of a presentation with material given on-site or off-site by trained personnel (e.g., Qualified Biologist or assigned Company Environmental Specialists). The Qualified Biologist(s) and/or assigned Company Environmental Specialist(s) shall have the following:

- A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field.

- Experience in construction monitoring for compliance with relevant biological mitigation measures.
- Experience in surveying and/or monitoring for the specific special status species that have the potential to occur in or near the Project area.
- Pre-approval from CalGEM prior to start of work on the Project.

The WEAP trainings shall cover an overview of the laws and regulations governing the protection of biological resources; a description of protected (i.e., special status) species known to occur or with the potential to occur in the Project area; their status and legal protections; what is considered habitat and disturbance; a description of wetlands and waterways within the Project area; biological resource protection measures; and a list of designated CRPC and Qualified Biologist contacts. The program shall provide general awareness to workers and supply materials to assist workers in recognizing protected species that may occur on the Project area, avoidance and minimization measures to protect biological resources, and how to report biological resources if observed on site. Reporting procedures shall include the immediate reporting (e.g., via phone call, then text or email if no immediate response from contact) of special status species to designated CRPC and Qualified Biologist contacts. In addition to the above, the WEAP shall include the following:

- The WEAP shall emphasize the need to avoid contact with wildlife, to avoid entry into areas where biological resources have been identified for avoidance, to review project specific pre-activity biological results reports and maps, and to implement all applicable avoidance and minimization measures included in the project specific pre-activity biological results report.
- All project personnel present on the project activity site must sign a statement verifying that they have completed the WEAP, and that they understand the biological requirements during project activities. CRPC shall maintain a physical and digital list of all persons who have completed the WEAP and shall provide the list to CalGEM upon request. An annual refresher training shall be required for all on-site personnel.

MM BIO-2: Best Management Practices for Biological Resources. The following Best Management Practices (BMPs) shall be implemented

during all construction, drilling, and operation activities to avoid and minimize potential significant adverse impacts on biological resources:

- CRPC and the Qualified Biologist(s) shall retain an updated map of special status species occurrences and sensitive habitats to avoid during the Project and will regularly communicate these locations to Project workers as observations occur.
- All vehicles shall observe a 15 mile-per-hour speed limit in all areas of disturbance and on unpaved roads unless otherwise posted. Off-road traffic outside designated access routes shall be prohibited. Speed limit signs shall be posted at visible locations at the point of site entry and at regular intervals on all unpaved access roads. Onsite CRPC personnel will visually monitor Project-related vehicle/equipment speeds during construction, and CRPC management would monitor CRPC company vehicle speeds with GPS and enforce the speed limit as necessary.
- All disturbance activities, except emergency situations or drilling that may require continuous operations, shall occur only during daylight hours. Continuous 24-hour drilling activities shall use directed lighting and shielding methods.
- Temporary night-lighting proposed for drilling activities would be shielded, oriented downward, and only operated when there is not sufficient daylight to comply with Sacramento County General Plan Policy LU-31, which requires outdoor lighting to preserve the natural nighttime environment by minimizing glare and light pollution. The Project would also comply with California Title 24 Energy Code, which requires outdoor lighting to be turned off when there is sufficient daylight **(DF AES-1)**.
- Wrappers, cans, bottles, bottle tops, and food scraps shall be disposed of in closed containers and routinely removed from the project activity site by the respective work crew, at intervals of no less than once per week. CRPC and any subcontracted personnel or representatives shall follow end-of-day cleaning procedures, and the company Environmental Specialist and/or Qualified Biologist shall ensure compliance with this measure.
- Excavations, spoil piles, unpaved access roadways, and parking and staging areas shall be subject to dust control (i.e., spraying surfaces with water using a water truck).
- Herbicides application shall be in accordance with existing laws and manufacturers' instructions (i.e., pesticide/herbicide labels). All herbicide chemicals used must be registered for use in the U.S. and

California and must have a label certifying that the Federal Environmental Protection Agency (U.S. EPA) and the California Department of Pesticide Regulation have approved the herbicide for use. CRPC uses third party vendors for vegetation control and would request herbicide records from them as necessary.

- No rodenticides shall be used and no alternatives to rodenticides are proposed.
- All open trenches, excavations, and/or holes more than 2 feet deep shall be backfilled or covered at the end of each workday to prevent wildlife entrapment. If an excavation or hole is too large to cover, escape ramps shall be installed at an incline ratio of no greater than 2:1 at least for every 500 feet, and at each end. All trenches and excavations shall be inspected for the presence of wildlife each day prior to the start of work. Immediately before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. Well cellars shall be drained and covered in order to keep wildlife from becoming entrapped. The Qualified Biologist shall facilitate self-relocation or relocate any non-listed special status species that are found entrapped to suitable habitat outside of the Project area. CRPC shall immediately contact the applicable agency(ies) (e.g., CDFW, USFWS) via phone call for further guidance in the event a state or federally listed species is entrapped.
- All construction pipes, culverts, or similar structures that are stored at a construction site overnight shall be capped prior to storage. If any wildlife is discovered inside a pipe, that section of pipe is not to be moved until the animal vacates the pipe on its own accord. The pipe shall be inspected at a minimum daily until the animal has moved out of the pipe. The pipe will be capped immediately once it is observed that the animal has vacated the pipe.
- Discovery of state or federally listed species that are injured or dead shall be reported immediately via telephone and within 24 hours in writing to CDFW and USFWS Office, as applicable, with a copy to CalGEM. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information, such as the cause of injury or death (if known).
- All activity shall remain within the proposed Project footprint and shall use previously disturbed areas to the maximum extent feasible to minimize the amount of new disturbance in areas with existing natural lands (e.g., utilizing all of an existing well pad/cleared area

for soil/fill material storage before storage on vegetated areas) **(DF BIO-1)**.

- Vehicle, equipment, and material storage shall be limited to previously disturbed areas or predefined storage/laydown areas that are incorporated into work site limits.
- No vehicles or construction equipment shall be parked within wetlands or waterways, including any dry wash or drainage, nor shall vehicles or construction equipment cross, or travel within wetlands/waterways where and when water is flowing or present. No materials shall be stored within wetlands/waterways. A minimum 10-foot setback from the edge of wetlands/waterways shall be adhered to.
- All construction equipment and construction personnel vehicles shall be checked underneath prior to moving them, to ensure that no wildlife is under equipment/vehicles. If any individuals are detected beneath equipment or vehicles, the equipment or vehicles shall be left in place until the wildlife moves out of harm's way on its own accord, as determined by a Qualified Biologist. This wildlife check shall be completed as part of the daily equipment/vehicle check completed by operators, which will be reported to CRPC.
- All tracked vehicles and other construction equipment entering the Project area from outside of Solano, Sacramento, or Contra Costa counties, shall be washed or maintained to be weed-free. CRPC contractors shall report county of origin for each piece of equipment to CRPC and CRPC management shall coordinate and ensure equipment is washed at a designated off-site location prior to bringing equipment to the Project area, as necessary.
- All washing of trucks, paint, equipment, or similar activities including concrete washout shall occur completely off-site.

CRPC shall maintain BMP implementation logs and submit them to CalGEM upon request to verify compliance.

MM BIO-3: Biological Pre-Activity Surveys and Monitoring. A Qualified Biologist (biological monitor) shall monitor all Project activities that have the potential to harm or impact special status wildlife including all vegetation removal and initial ground disturbance. The Qualified Biologist(s) shall have the following:

- A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field.

- Experience in construction monitoring for compliance with relevant biological mitigation measures.

- Experience in surveying and/or monitoring for the specific special status species that have the potential to occur in or near the Project area.

- Pre-approval from CalGEM prior to start of work on the Project.

Project activities that require a biological monitor include but are not limited to ground disturbance associated with well pad/access road construction and pipeline installation. The biological monitor shall conduct a biological clearance survey of all work areas prior to the start of daily Project activities, including walking transects of the work area(s) and visual inspection (utilizing binoculars as needed) of all vegetation, excavations/trenches, and equipment. The purpose of the clearance survey is to identify any biological resources (e.g., nests, dens, burrows) within the work areas that may have occurred since the last workday, any wildlife species within the work areas, and to inspect any exclusion areas and make sure they remain intact. Once the work areas have been cleared, the biological monitor shall inform the work crew that work may proceed. Results of daily biological clearance surveys shall be reported on daily monitoring forms which shall be retained by CRPC and provided to CalGEM upon request. Once activities that have the potential to harm or impact wildlife have been completed, the Qualified Biologist, in coordination with CRPC, will determine if biological monitoring should continue based on the work activity (e.g., activities that do not include vegetation removal and initial ground disturbance) and any sensitive resources occurrences (e.g., nearby sensitive habitats, recent observations of special status species). Activities that will likely not require a biological monitor include drilling operations and well maintenance.

If at any time during Project activities any special status wildlife species are observed within the Project area, work around the animal's immediate area shall be stopped and the biological monitor shall be immediately notified (if they are not the initial observer). Work shall be redirected to an area within the Project area that would not impact these species until the animal has left the area of its own volition. Listed

species will be allowed to leave the Project area unimpeded and will not be handled or relocated without any applicable permits that shall be obtained prior to the start of the Project (e.g., USFWS Biological Opinion, CDFW Incidental Take Permit). Work would resume once the animal is clear of the work area. If the animal does not leave or is nesting/breeding, an appropriate temporary avoidance zone will be established, in accordance with **MM BIO-4, MM BIO-5, MM BIO-7, MM BIO-8, MM BIO-9, MM BIO-10,** and **MM BIO-12**.

In the unlikely event a special status species is injured or killed by Project-related activities, the biological monitor would immediately stop work and notify CRPC, who shall immediately contact the appropriate agencies, including CDFW and/or USFWS, as applicable. Discovery of state or federally listed species that are injured or dead shall be reported immediately via telephone and within 24 hours in writing to CDFW and/or USFWS, as applicable, with a copy to CalGEM. CRPC and the biological monitor shall provide photos and details of the incident to applicable agencies, and any agency-approved adaptive management measures that will be implemented to avoid future incidents (e.g., reduced equipment speed, increased avoidance buffer size).

The biological monitor shall keep notes of all species observed, work activities conducted and compliance concerns, if any, on daily monitoring forms, which shall be retained by CRPC for the duration of the project and provided to CalGEM and other applicable agencies upon request.

Burrowing Owl

Burrowing owl is a candidate species under the CESA, a CDFW Species of Special Concern, and is protected under MBTA and California Fish and Game Code. A CESA Incidental Take Permit from CDFW is required under Fish and Game Code Sections 2080 et seq. prior to any project activities that may result in take of CESA-listed or candidate species.

During 2025 reconnaissance-level field surveys for the Project, one individual burrowing owl and one active burrow were identified adjacent to the access road to the SOL-6 well pad/access road. Suitable habitat for burrowing owls was found throughout the Project area and surrounding vicinity within fallow agricultural fields, and along the berms of road cuts, irrigation canals, and abandoned reservoirs. These areas were observed to contain common prey species typical of disturbed agricultural lands, including burrowing rodents such as California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher

(*Thomomys bottae*), and deer mouse (*Peromyscus maniculatus*), which were frequently observed along field margins and road edges. This Project area provides low-growing vegetation, burrow availability, and prey resources essential for the species' survival and breeding activities.

The implementation of **MM BIO-4** would reduce impacts to burrowing owls to less than significant by requiring pre-construction surveys, avoidance buffers and monitoring to avoid disturbance to active and inactive burrows and burrowing owl activity.

MM BIO-4. Burrowing Owl Pre-Construction Surveys and Avoidance. Prior to any construction, vegetation removal, or ground-disturbing activities, a burrowing owl survey shall be conducted by a Qualified Biologist following CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012; Appendix F). Surveys should cover the Project area and adjoining areas within 150 meters (approximately 500 feet), or more where direct or indirect effects could potentially extend offsite, to detect burrows and burrowing owl activity.

If active or inactive burrows are confirmed during pre-construction surveys, a Qualified Biologist shall determine whether Project activities could directly or indirectly result in disturbance, injury, mortality, or loss of occupied burrows or habitat. The Qualified Biologist shall establish and maintain appropriate no-disturbance buffers around each active burrow consistent with the Staff Report. Buffer distances shall be based on the time of year, type and intensity of Project disturbance, existing disturbance levels, observed owl behavior, visual barriers, topography, and other site-specific conditions. Avoidance buffers shall be delineated using pin flags and/or survey stakes with flagging and shall be communicated to work crews prior to work near the avoidance zone.

The avoidance buffers shall be consistent with the applicable setback recommendations in the Staff Report unless a different buffer is supported by site-specific conditions and evaluation by the Qualified Biologist, in consultation with CDFW. Occupied burrows identified outside the area of ground disturbance but within an area where Project activities could result in direct or indirect disturbance shall be buffered with appropriate avoidance measures determined by the Qualified Biologist in coordination with CDFW.

Any active or inactive burrow(s) with avoidance buffers shall be monitored by the Qualified Biologist at a minimum of once per week to document burrow activity. Avoidance buffers and other buffer

measures shall be monitored for maintenance needs weekly at a minimum.

If active or inactive burrow avoidance is determined to be infeasible during the non-breeding season (between September 1 and January 31), a Qualified Biologist may implement burrow exclusion measures in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation.

Because the burrowing owl is a candidate species under CESA, any activities that may result in take require an Incidental Take Permit from CDFW pursuant to Fish and Game Code Section 2081(b) prior to implementation. Burrow exclusion may include one-way doors left in place for 48 hours to ensure burrowing owls have left the burrow before excavation, with the burrow visited twice daily for evidence that owls are inside and can't escape. Prior to burrow exclusion measures, a Burrowing Owl Exclusion Plan will be prepared and approved by CDFW. Excavation and closure of burrows will occur only pursuant to the CDFW-approved plan and an authorized Incidental Take Permit.

Swainson's Hawk

Swainson's hawk is a threatened species under the CESA (listed in 1983) and is protected under the MBTA (1918). Suitable foraging habitat is present in the open agricultural fields, pastures, and fallow lands present throughout most of the undeveloped portions of the Project area. While no active nests were detected during field surveys, several mature trees in the broader landscape could provide potential nesting opportunities. CDFW CNDDB records indicate multiple nest sites within five miles of the Project area, with known nest trees on Bradford Island within approximately 0.5 miles of the Project footprint (Occurrence #1801) and on Twitchell Island within approximately 0.75 miles of the Project footprint (Occurrence #1674 and #2742) (CDFW, 2025). Construction and drilling operations would be temporary, and no nesting trees are proposed for removal at part of the Project; however, given their large foraging ranges (approximately up to 18 miles from a nest tree) (CDFG, 1994), Swainson's hawks could utilize the Project area for hunting activities during the breeding season.

Because Swainson's hawk is a state-listed species, and there are known nesting occurrences within 0.5 to 0.75 miles of the Project area, there is the potential that construction near Swainson's hawk nesting areas could disrupt breeding activities if construction occurs during the Swainson's hawk nesting season (March 1 through September 15). Any Project activities that take place between September 16 to February 28, outside the Swainson's hawk nesting season, would avoid potential nesting impacts.

The implementation of **MM BIO-5** would reduce impacts to nesting Swainson's hawk to less than significant by requiring pre-construction surveys during nesting season, establishing nest protection buffers and monitoring if breeding hawks are present.

MM BIO-5: Pre-Construction Swainson's Hawk Protocol Nesting Surveys. Project activities and vegetation removal shall be prioritized to occur outside of Swainson's hawk nesting season (September 15 to March 1). If project activities between March 1 to September 15 cannot be avoided, surveys shall be conducted by a Qualified Biologist for active Swainson's hawk nests. The Qualified Biologist(s) shall have the following:

- A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field.
- Experience in construction monitoring for compliance with relevant biological mitigation measures.
- Experience in surveying and/or monitoring for Swainson's hawk.
- Pre-approval from CalGEM prior to start of work on the Project.

The applicant shall conduct a protocol-level survey in conformance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*, (Swainson's Hawk Technical Advisory Committee, 2000) hereby incorporated by reference. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. A written report summarizing the pre-construction survey results shall be prepared within 10 days of survey completion and submitted via email to CalGEM and CDFW for review. If the surveys show that there are no active Swainson's hawk nests within 0.5 mile of construction activities, then no further mitigation for nest disturbance will be required.

If active Swainson's hawk nests are identified near the Project area, a 0.5-mile nest protection buffer shall be delineated within the Project area using pin flags and/or survey stakes with flagging and shall be shown to work crews prior to any work near the avoidance zone(s). Any occupied nest(s) with avoidance buffers shall be monitored by the Qualified Biologist at a minimum of once per week to document nest

activity. Avoidance buffers shall be monitored for maintenance needs weekly at a minimum.

The following nest protection/buffer measures shall be required:

- Apply a nest protection buffer with a minimum distance of 0.5 mile from an active nest. Postpone Project activities within the nest protection buffer until after the young have fledged and are no longer dependent on the nest tree. The minimum nest protection buffer may be reduced in coordination with CDFW if existing site conditions, habituation to disturbance, proposed disturbance levels, and nest concealment or barriers between the nest and activities indicate a reduced buffer would be effective.
- If it is not possible to postpone Project activities within the minimum nest protection buffer, CRPC shall coordinate with CDFW to develop a monitoring protocol and implement full-time monitoring of the nest by a qualified raptor biologist for any Project activities within 0.5 mile, including monitoring the nest ahead of time to establish baseline conditions prior to start of work. If the monitoring biologist observes signs of distress (e.g., increased flushing from nest, increase vocalizations) in response to Project activity noise and/or equipment, they shall have the authority to stop construction work and coordinate with CDFW to establish additional protection measures to ensure avoidance of nest abandonment prior to the re-start of Project activities.

Loss of Swainson's Hawk Foraging Habitat

The agricultural fields, pastures, and fallow lands present throughout most of the undeveloped portions of the Project area provide suitable foraging habitat for Swainson's hawk, and CDFW CNDDB records indicate over 20 historical recorded occurrences within the region, including multiple nest sites occurring within five or 10 miles of the Project area. Swainson's hawks generally forage within 10 miles of their nest tree, and more commonly within five miles of their nest tree (CDFG, 1994). Generally, CDFW requires mitigation according to the Staff Report regarding *Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California* (CDFG, 1994) for loss of Swainson's hawk foraging habitat based on the presence of active nests within 10 miles of the Project.

Approximately 25 acres of foraging habitat would be lost as a result of conversion of agricultural fields/pasture to developed lands for the proposed well pads and access roads. In addition, periodic operations and maintenance activities in the well development area have the potential to temporarily displace foraging hawks during maintenance activities. Most wells would

undergo periodic workovers, which are temporary maintenance or repair activities performed on an existing well to maintain or improve its production. Workovers may include activities such as cleaning out the well or making repairs or modifications to equipment within the well. Most wells would undergo approximately 2 to 3 workovers during the operational life of the well (approximately 30 years), with each workover lasting 5 to 15 days. Implementation of **MM BIO-6** would reduce impacts to Swainson's hawk due to loss of habitat to less than significant.

MM BIO-6: Swainson's Hawk Off-Site Foraging Habitat Management. For nesting occurrences of Swainson's hawks within 10 miles of the permanent well development areas (i.e., well pad/access road components), the applicant shall coordinate with CDFW prior to the start of work in each county to identify off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the Project area. Table 5.4-2 outlines CDFW approved mitigation ratios. The applicable mitigation ratio is based on the distance from the Project area to the nearest active Swainson's hawk nest tree. Mitigation credits shall be obtained through a CDFW-approved mitigation bank for Swainson's hawk with a service area that covers the Project area.

Prior to construction activities, compliance shall be verified through CDFW coordination records and mitigation bank credit transfer records as applicable. CRPC shall submit documentation of CDFW coordination records and receipt of payment of mitigation credits (as applicable) to CalGEM and CDFW prior to construction. All records shall be retained by CRPC and made available by request.

Table 5.4-2. Swainson's Hawk Foraging Habitat Mitigation Ratios

Distance from Project Area to Nearest Active Nest Tree (miles)	Mitigation Ratio per Acre
1 mile or less	1:1
Greater than 1 mile, up to 5 miles	0.75:1
Greater than 5 miles, up to 10 miles	0.5:1

Source**:** CDFG, 1994

Nesting Birds

The Project has the potential to impact nesting migratory birds, including MBTA-protected species and other regional special status species. Potential nesting habitat for tree and/or ground-nesting species occurs throughout the Project area. The Biological Technical Report (Appendix E) identifies suitable nesting habitat throughout the Project area for cavity, ground, tree, and shrub-nesting birds and identifies potential nesting habitat for larger raptors in power poles and taller trees, as well as below-ground nesting habitat for western burrowing owl (see Appendix A). Construction disturbance, grading, and vegetation removal have the potential to impact nesting birds and/or raptors during the typical nesting bird season (February 1 – August 31), with raptors potentially starting nesting activities a month earlier (January 1).

The implementation of **MM BIO-7** would reduce impacts to nesting birds to less than significant by requiring pre-construction surveys to identify and protect active nests, if present.

MM BIO-7: Nesting Bird Pre-Construction Surveys and Avoidance. If construction or vegetation removal work occurs outside of nesting bird/raptor season (typically August 31 to January 1), impacts would be avoided. Surveys would not be required for work conducted during this part of the year, and no further mitigation for nest disturbance would be required. If construction is scheduled to occur during nesting bird/raptor season (typically January 1 to August 31), the following measures shall reduce impacts to a less than significant level:

If vegetation removal, ground disturbance, or other construction activities occur between January 1 to August 31, pre-construction surveys shall be conducted by a Qualified Biologist of suitable habitat within 500 feet of worksites and disturbance areas for nesting birds and raptors. The Qualified Biologist(s) shall have the following:

- A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field.
- Experience in construction monitoring for compliance with relevant biological mitigation measures.
- Experience in surveying and/or monitoring for nesting birds/raptors.
- Pre-approval from CalGEM prior to start of work on the Project.

In addition, large trees, transmission towers, bridges, and other similar structures within 0.5 miles of the work area shall be surveyed for golden

eagle nesting activities, prior to work and weekly throughout the nesting season. All pre-construction surveys shall be conducted within 10 days prior to the start of construction, ground disturbance, or vegetation removal.

If nests are identified, a suitable nest protection buffer shall be recommended and implemented by the Qualified Biologist based on the species, nest phenology, topography, activity type, and site-specific conditions (generally 250 ft for passerines, 500 ft for raptors, and up to 0.5 miles for golden eagle/Swainson's hawk). Any occupied nest(s) shall be monitored by the Qualified Biologist at a minimum of once per week to document nest activity and confirm when/if young have fledged. Avoidance buffers shall be monitored for maintenance needs weekly at a minimum. Construction activities shall be prohibited within the established buffer zones until the young have fledged. If a lapse in Project-related activities occurs for 10 days or longer during the nesting season, another focused pre-activity nesting bird survey shall be coordinated by CRPC and conducted by the Qualified Biologist before construction activities can be reinitiated.

A written report summarizing the pre-construction survey results shall be prepared within 10 days of survey completion and submitted to CalGEM. Pre-activity survey reports shall be retained by CRPC and made available to applicable agencies upon request.

American Badger

American badger is a CDFW Species of Special Concern that inhabits a variety of open landscapes including grasslands, pastures, scrublands, and lightly cultivated agricultural areas where soils are suitable for digging. Badgers primarily prey on small mammals such as ground squirrels, gophers, and rabbits, using their strong forelimbs and claws to excavate burrows and pursue prey underground. They rely heavily on open habitats with friable soils and abundant prey populations to survive. During 2025 field surveys, no American badgers or active burrows were observed; however, some portions of the Project area contain friable soils and support prey species typical of open agricultural and grassland habitats, including California ground squirrel and Botta's pocket gopher, both of which were observed during field surveys. These conditions and the Project area's open fallow fields and grasslands provide suitable foraging and denning habitat. Construction, ground disturbance, grading, and vegetation removal have the potential to impact American badger, with the highest potential impact risk from major grading and ground disturbance activities.

Implementation of **MM BIO-8** would reduce impacts to American badger to less than significant.

MM BIO-8. American Badger Pre-Construction Surveys and Avoidance. Prior to ground disturbance, grading, or vegetation removal activities, a pre-construction survey of the work areas and a 200-ft buffer shall be completed by a Qualified Biologist to identify any active badger burrows. If an occupied American badger den is identified, the following measures shall be implemented and information regarding the location and number of badger dens shall be included in a pre-construction survey report:

- Occupied American badger dens (non-maternity dens) shall be avoided by establishing a minimum 50-foot non-disturbance buffer. This avoidance buffer shall be delineated within the Project area using pin flags and/or survey stakes with flagging and shall be shown to work crews prior to any work near the avoidance zone(s). The Qualified Biologist shall monitor the avoidance buffer weekly, at minimum, to verify that the buffer remains adequately delineated and maintained.

- During the typical pup-rearing season for American badger (February 15 through July 1), occupied dens shall be presumed to be maternity dens and shall be avoided by establishing a minimum 200-foot non-disturbance buffer until the burrow is no longer active.

- A Qualified Biologist shall monitor all ground-disturbing activities near the avoidance zones to ensure that work does not encroach on established buffer areas. Destruction of a maternity den burrow shall only proceed after the maternity den is no longer active (i.e., badger adults and cubs have left and no longer utilize the den) and no badgers are present within the burrow.

Special Status Bats

Hoary bat, pallid bat, and western red bat are all CDFW Species of Special Concern that occur in the Project region and have the potential to utilize the mature riparian and ornamental trees or human-made structures near the Project area for roosting activities. The agricultural fields and open spaces throughout the Project area may also offer suitable foraging habitat for these bat species. Nighttime construction activities may temporarily increase noise and lighting that could alter bat foraging behavior or local flight paths; however, such effects are typically short-term and minor and would be mitigated with **MM BIO-2** and comply with, which includes measures for temporary lighting to be shielded and downward-oriented **(DF AES-1)**. Construction-related impacts to bats most commonly occur during tree removal or structure/building demolition, which directly impact roosting bats or maternal

bat roosts. No tree removal and no building or structure demolition is proposed as part of the Project; therefore, impacts to special status bats would be less than significant.

Special Status Bees

Project ground disturbance, grading, and vegetation removal have the potential to impact special status bees. Crotch's bumblebee and Western bumblebee are candidate species under the CESA. Pursuant to California Fish and Game Code Section 2074.2, a candidate species receives the same legal protection as listed threatened or endangered species during the candidacy review period. These species were not identified during 2025 field surveys nor were they preferred host plants; however, field surveys were conducted outside of the optimal blooming period (i.e., spring and summer). The fallow agricultural fields and pastures within the Project area where flowering plants may be seasonally available would provide suitable habitat for these regionally occurring bees.

The implementation of **MM BIO-9** would reduce impacts to special status bees to less than significant by requiring a focused habitat assessment during the optimal season for bumblebee detection and, if bees are observed, protecting nesting and foraging plants, where present.

MM BIO-9. Bumblebee Pre-Construction Habitat Assessment and Avoidance Surveys. Prior to Project initiation, a habitat assessment and surveys of the Project area shall be conducted by Qualified Biologists in accordance with *CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (Survey Considerations)* (2023). The habitat assessment shall be conducted by a Qualified Biologist of the entire Project area and the appropriate buffer to evaluate the availability of key resources for CESA candidate bumble bee species, which shall include documenting foraging resources (blooming flowers), nesting substrates, (such as undisturbed soil, rodent burrows), and potential overwintering sites (loose soil, leaf litter, or undisturbed ground cover). This assessment shall be completed prior to bumble bee surveys, which shall be completed during the appropriate season for surveys (i.e., April – September), which shall be completed prior to the start of work.

Following the habitat assessment to determine presence of suitable resources, surveys must be performed by Qualified Biologists during peak bumble bee activity (April–September) under suitable weather conditions, generally on warm, sunny days with temperatures between 65°F and 90°F and wind speeds below 8 miles per hour. Surveys should occur during the day, at least an hour after sunrise and at least two

hours before sunset, though ideally between 9:00 am and 1:00 pm. Results of bumble bee surveys and associated weather/site conditions shall be recorded on survey data sheets by surveyors. Standardized methods involve timed aerial netting (minimum 30 minutes per acre) with non-lethal documentation and careful handling. Survey efforts must capture precise GPS locations, detailed habitat characteristics, and species-level identification, with multiple visits recommended across the season, in accordance with the CDFW Survey Considerations. At least three on-site surveys shall be conducted prior to Project implementation, spaced two to four weeks apart, with a minimum of one person-hour of searching per three acres of suitable habitat.

If any candidate bumblebee species are detected during surveys, the Qualified Biologist and CRPC shall immediately notify CDFW for further coordination to avoid or mitigate impacts and incidental take. If active nests of candidate bumblebee species are identified, an appropriate no disturbance buffer shall be established with pin flags and/or survey stakes and flagging around the nest to reduce the risk of disturbance or accidental take until CDFW can be contacted for further guidance. Avoidance zones will be shown to any work crew that will be working in the area and will be monitored at least weekly for maintenance needs.

Northwestern Pond Turtle

The northwestern pond turtle is a CDFW Species of Special Concern and is proposed for listing as threatened under FESA (USFWS, 2025). Pond turtles typically inhabit ponds, marshes, and streams with basking sites. The Project area is primarily agricultural fields and disturbed grasslands but does contain irrigation canals and water conveyance structures that may provide marginal basking or nesting habitat or corridors for transitory turtles that may be using the upland habitat to migrate to or from the nearby rivers, streams, or sloughs. Project activities including moving heavy equipment, grading, pipeline trenching/construction, or vegetation removal have the potential to impact northwestern pond turtles, with ground disturbance activities (e.g., grading, trenching) having the highest potential to impact turtles. Most ground disturbances would occur at the start of construction to establish well pad/access road components and during trenching for pipeline installation.

The implementation of **MM BIO-10** would reduce impacts to northwestern pond turtle to less than significant by requiring pre-construction surveys and a biological monitor to be present when ground disturbing activities occur in sensitive habitats.

MM BIO-10: Northwestern Pond Turtle Pre-Construction Surveys and Avoidance. A Qualified Biologist shall conduct pre-construction surveys for northwestern pond turtles 48 hours prior to ground disturbance to ensure that individuals are not present in the work area. Survey area will include suitable wetland and upland habitat areas in the Project area and within a 100-foot buffer. Avoidance buffers shall be delineated with pin flags or survey stakes and flagging and shall be shown to any work crew that will be working near the avoidance zone. Avoidance buffers shall be monitored weekly at a minimum for maintenance needs.

A Qualified Biological monitor shall be present to monitor Project activities during any in- or near-water work and initial ground disturbance that has the potential to impact special status species. Should northwestern pond turtle be found within the work areas, a Qualified Biologist will require all work to stop until the turtle moves out of the work area and shall notify USFWS via email within 48 hours for further coordination to avoid or mitigate impacts.

Compliance shall be verified through pre-construction survey reports, field monitoring logs, buffer delineation records, and incident documentation (if applicable). CRPC shall prepare and maintain pre-construction survey reports and weekly monitoring logs. Survey documentation and any incident reports shall be submitted to USFWS upon request and provided to CalGEM to verify compliance.

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 Wildlife or U.S. Fish and Wildlife Service?

Less than Significant Impact with Mitigation. The construction of new well pads and access roads will result in approximately 25 acres of conversion of fallow or active agricultural fields and pastures to developed lands. Some riparian vegetation (i.e., willows and cottonwood trees) was documented within the Project area during 2025 field surveys, particularly along drainage channels, low-lying zones, and levee edges; however, the permanent well pad/access road impact footprints do not extend into these riparian areas (Mesa, 2025), and no tree removal is expected to be necessary for this Project.

Some of the Project components may cross through or extend into wetland habitats (e.g., riparian, freshwater emergent, riverine-adjacent) based on the 2025 biological field surveys and desktop review of the USFWS NWI. The biological resources evaluation identified wetland and waterway features within the Project vicinity, including features associated with agricultural canals and

drainage systems. Potential wetlands and waterways were identified in the Project area during the desktop review, and various wetland habitats were documented in the Project area during biological field surveys. However, the state and federal jurisdictional status of these features has not been determined. Jurisdictional delineation under Clean Water Act Section 404 has not been completed by USACE, and jurisdictional delineation under Fish and Game Code 1600 has not been completed by CDFW. Site-specific evaluation and, as appropriate, agency coordination would be required to determine the extent of jurisdictional resources and applicable permitting requirements. Table 5.4-1 identifies Project components located within or near identified wetland features and provides approximate temporary and permanent wetland impact areas based on the information currently available. These impact estimates are preliminary and would be refined following the required aquatic resource delineation required by implementation of **MM BIO-11**.

Project designs would avoid disturbance to wetlands to the maximum extent feasible. Pipeline installation would not result in permanent conversion of land use and would only include temporary impacts from trenching and the associated temporary work area. Pipeline installation would occur over the course of weeks, then regrowth of native vegetation would occur over the course of months.

Depending on the jurisdictional status and extent of the wetlands in or near the Project footprint, some of the following authorizations may be required:

- Clean Water Act Section 401 Water Quality Certification by the Central Valley Regional Water Quality Control Board (CVRWQCB) **(RR HYDRO-1)**
- Clean Water Act Section 404 Discharge/Fill Permit by the USACE **(RR HYDRO-2)**
- Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement with CDFW **(RR BIO-1)**

Implementation of **MM BIO-11**, **MM BIO-12**, **MM BIO-13,** and **MM BIO-14** would reduce potential impacts to riparian habitat and wetlands by requiring delineation of potential jurisdictional wetlands, creating avoidance buffers, ensuring activities occur inside the designated footprint, securing authorizations to alter the wetlands, if needed, and revegetating temporary work areas within wetlands following Project completion.

MM BIO-11: Preliminary Aquatic Resource Delineation. Prior to the initiation of construction, the applicant shall conduct a preliminary aquatic resource delineation of the Project site to define the limits of jurisdictional areas and determine the extent of Project impacts. This

delineation will be completed in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports for the USACE Sacramento District* (USACE, 2016) and shall be completed in the winter or spring months. The delineation will be verified by the USACE and should be completed ahead of or in the early permitting stages of the Project to identify potential conflicts as early as possible. The verified delineation will provide jurisdictional boundaries for the purposes of avoidance or with the impact acreage necessary for preparing permit application if impacts to jurisdictional areas cannot be avoided. If the Project can fully avoid jurisdictional aquatic resources, no further mitigation would be required. If the Project cannot fully avoid delineated aquatic resources, **MM BIO-13** will apply.

CRPC shall prepare and submit an aquatic resource delineation report and submit it to USACE Sacramento District and CalGEM to verify compliance.

MM BIO-12: Temporary Flagging or Barrier Fencing to Protect Sensitive Habitat. A Qualified Biologist will identify and flag or fence sensitive wetland habitat within 50 feet of the Project disturbance areas to ensure it is avoided during Project development activities. Areas inside of the flagging or fencing will be excluded from equipment or other ground disturbing activities during Project activities. The type of fencing installed shall be appropriate for the activities proposed in the adjacent work areas (e.g., silt fencing in areas with potential run-off and/or orange construction fencing). The flagging or barrier fencing shall be monitored weekly at a minimum for maintenance needs.

CRPC shall maintain documentation within weekly field logs verifying installation and maintenance of exclusion fencing. Documentation shall be made available to CalGEM upon request.

MM BIO-13: Compliance with Permit Conditions for Impacts to Jurisdictional Wetlands and Waterways. If Project impacts to federal and/or state jurisdictional areas are identified, the applicant shall obtain all necessary permits for impacts to waters of the U.S. from the USACE (approximately 6 to 12 months for permit review/approval), for impacts to waters of the state from the CVRWQCB (approximately 5 to 9 months for permit review/approval), and/or for potential impacts to stream features from CDFW (approximately 3 to 6 months for permit review/approval) prior to project implementation. Implementation of the Project shall comply with all permit conditions and CRPC shall

coordinate and complete compliance monitoring/documentation of all conditions at the applicable intervals.

If required, compensatory mitigation must be consistent with the regulatory requirements pertaining to mitigation type, location, and ratios, but will be accomplished with a minimum of 1:1 replacement ratio. If compensatory mitigation is needed, the applicant may satisfy all or a portion of their mitigation through the purchase of "credits" at a mitigation bank approved by the USACE, RWQCB, and/or CDFW for compensatory mitigation of impacts to hydrologically similar waters, or through other means, including but not limited to on- or off-site habitat creation, conservation easement, or contribution to approved in-lieu habitat fund. The mitigation must be approved by the permitting agencies and shall be implemented by the applicant subsequent to permit issuance and prior to project impact.

CRPC shall document compliance with permit conditions. Permit compliance reports shall be submitted to applicable regulatory agencies (USACE, CVRWQCB, and CDFW) in accordance with permit conditions (RR HYDRO-1, RR HYDRO-2, RR HYDRO-3).

MM BIO-14: Revegetation of Temporary Work Areas. The applicant shall collect and store the topsoil from all temporary work areas located within riparian habitat or wetlands, including proposed pipeline corridors. Topsoil will be collected by scraping and collecting the top six inches of the ground using heavy equipment (e.g., skid steer, backhoe, excavator, dozer) in temporary work areas. Collected topsoil shall be stockpiled and temporarily stored directly on an existing disturbed well pad. Once work is completed within temporary work areas, the topsoil shall be redistributed and spread evenly across the disturbed areas using heavy equipment. A Qualified Biologist shall oversee and direct the topsoil collection and replacement process.

In addition to topsoil collection and replacement, a native seed mix appropriate to the types of riparian and wetland habitats present in the Project area shall be applied to temporary work areas following Project activities. A Qualified Biologist shall select the appropriate type of native seed mix(es) and apply the seed to disturbed areas via hand casting. Any revegetation of temporary disturbance areas within jurisdictional wetlands/waterways shall be monitored in accordance with the applicable permits from USACE, RWQCB, and/or CDFW.

Field monitoring logs and documentation shall be maintained by CRPC and the Qualified Biologist and submitted to CalGEM to verify compliance. Documentation shall also be made available upon request to USACE, RWQCB, and CDFW.

Bradford Island (Contra Costa County)

Bradford Island within Contra Costa County is designated as a Priority Conservation Area by the Association of Bay Area Governments and the Metropolitan Transportation Commission. Priority Conservation Areas are locations for which there is broad consensus on the need for long-term protection given the ecological resources present and urban development pressures, although they do not change the land use status for a piece of property. The local jurisdiction, the Contra Costa County Conservation and Development Department, maintains planning and permitting authority over the property (Contra Costa County, 2024a). The CC-1 Well Pad/Access Road and Pipeline CC-1 components are proposed on Bradford Island; however, the well pad/access road footprint (permanent conversion of land use) is located in an upland area outside of estimated wetland boundaries (Mesa, 2025; USFWS, 2024).

The Pipeline CC-1 temporary work area and permanent pipeline corridor would run through existing wetlands or riparian habitats. Specific wetland impact acreages associated with the Project will be determined with implementation of **MM BIO-11**, which would delineate the extent of jurisdictional aquatic resources within the Project area prior to the start of construction. Implementation of **MM BIO-11** through **MM BIO-14** would be consistent with local plans and policies and would reduce impacts to wetlands or riparian habitat to less than significant.

No other sensitive natural community identified in the Solano County or Sacramento County general plans were identified within the Project area during the 2025 biological field surveys.

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?

Less than Significant with Mitigation. Potential wetlands and waterways were identified in the Project area during the desktop review, and various wetland habitats were documented in the Project area during biological field surveys; however, the state and federal jurisdictional status of these features has not been determined and requires site-specific evaluation and, as appropriate, agency coordination (Mesa, 2025). Temporary and permanent wetland impact estimates are preliminary and would be refined following the aquatic resources delineation required by implementation of **MM BIO-11**.

The USFWS NWI (USFWS, 2024) and the USGS NHD (USGS, 2012a, 2012b, and 2022) show several wetlands throughout and adjacent to the Project area (refer to Figure 5.4-1). Refer to Table 5.4-1 for a list of the Project components located within or near these wetlands and approximate wetland impacts. These wetlands may be considered state and/or federal jurisdictional wetlands. Depending on the jurisdictional status and extent of the wetlands in or near the Project footprint, some of the following authorizations may be required:

- Clean Water Act Section 401 Water Quality Certification by the Central Valley Regional Water Quality Control Board (CVRWQCB) **(RR HYDRO-1)**
- Clean Water Act Section 404 Discharge/Fill Permit by the USACE **(RR HYDRO-2)**
- Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement with CDFW **(RR BIO-1)**

Implementation of **MM BIO-11** through **MM BIO-14** will mitigate impacts to jurisdictional wetlands to a less than significant level. Consultation with the above agencies (as applicable) regarding jurisdictional wetlands waterways would be initiated following completion of **MM BIO-11**.

In addition, implementation of **MM BIO-15** would reduce impacts to jurisdictional wetlands to less than significant by ensuring jurisdictional wetlands outside of the Project footprint are protected from runoff.

MM BIO-15: Erosion Control Best Management Practices. Standard best management practices (BMPs), such as the use of silt fencing and straw wattle, shall be implemented within terrestrial areas of temporary and/or permanent ground disturbance, as applicable, to minimize erosion and sedimentation to nearby ephemeral and intermittent channels. BMPs shall not consist of monofilament plastic netting that may entangle wildlife. CRPC shall maintain weekly field inspection logs demonstrating implementation of BMPs for maintenance needs. Records shall be made available to CalGEM upon request.

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?

Less Than Significant Impact. Wildlife migration corridors can facilitate movement between otherwise separated habitat areas and may provide opportunities for wildlife dispersal and genetic exchange between populations. The Sacramento River, San Joaquin River, and the major sloughs throughout the Project area provide migratory corridors for fish species and some aquatic

reptiles in the region; however, the Project will not affect these major waterways. Pipeline installation for the CC-1 pipeline at the San Joaquin River crossing would include the use of an existing underground conduit underneath the river and would therefore not interfere with wildlife movement.

The Project area in Solano, Sacramento, and Contra Costa counties is considered open space, comprised mostly of contiguous agricultural fields and pastures with some areas of wetlands and riparian habitat along drainages, low-lying areas, and levee edges. Based on site conditions and limited development, the Project area provides ample space for wildlife movement (e.g., large mammals like deer and coyotes, and various birds/raptors), throughout the year. The wetlands and riparian habitat in the Project area also provide suitable foraging and/or nesting habitat for migratory and resident birds.

The CDFW ranks areas throughout the State of California for their importance in terrestrial connectivity. The terrestrial connectivity dataset summarizes information on terrestrial connectivity, including the presence of mapped corridors or linkages and the juxtaposition to large contiguous natural areas to support conservation planning efforts (CDFW, 2024b). Most of the Project area is ranked as "connections with implementation flexibility", which are areas identified as having connectivity importance, but that have not been identified as channelized areas, species corridors, or habitat linkages at this time. This may change with future changes in surrounding land use or regional specific information (CDFW, 2024b). The four northern Sacramento well pad/access road components and associated pipelines (SAC-BR-1, SAC-BR-2, SAC-BR-3, SAC-BR-4) are located in areas ranked as having "limited connectivity opportunity," which CDFW describes as areas where land use may limit options for connectivity (e.g., agricultural or urban areas) or where no connectivity importance has been identified in modeling (CDFW, 2024b).

Impacts to wildlife corridors and connectivity would be temporary, occurring only during active construction, well drilling, and pipeline installation activities. The presence of heavy equipment and vehicle traffic would likely deter wildlife from the immediate Project area while in operation; however, wildlife would still be able to move freely through suitable habitat adjacent to and surrounding the Project area. Implementation of **MM BIO-2** would avoid and minimize potential interference with wildlife movement during construction by requiring daily backfilling or covering of trenches, conducting wildlife inspections, enforcing speed limits, implementing dust control measures, restricting work areas, and the use of shielded, downward-directed temporary night lighting. These measures ensure that temporary construction areas do not create barriers to wildlife or impede their movement.

Permanent well facilities would not result in the construction of structures that would be a barrier to migrating or transitory wildlife, either on the ground or in

the air. Project operations and maintenance activities would involve periodic inspections and occur infrequently and are not expected to impact wildlife migration or movement; therefore, impacts to migration or wildlife corridors would be less than significant.

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

Less than Significant with Mitigation. As discussed in (c) above, Bradford Island is designated as a Priority Conservation Area by the Association of Bay Area Governments and the Metropolitan Transportation Commission. The CC-1 Well Pad/Access Road and Pipeline CC-1 components are proposed on Bradford Island; however, the well pad/access road footprint (permanent conversion of land use) is located in an upland area outside of estimated wetland boundaries (Mesa, 2025; USFWS, 2024).

The Pipeline CC-1 temporary work area and permanent pipeline corridor would run through existing wetlands or riparian habitats. Implementation of **MM BIO-11** through **MM BIO-15**, would be consistent with local plans and policies to protect wetlands and ensure appropriate mitigation occurs for any loss of or modification to wetlands (i.e., Policy RS.P-1, -7, and -8 of the Solano County General Plan [2008]; Policy CO-58 and -59 of the Sacramento County General Plan [2011]; and Policy COS-P5.1 of the Contra Costa County General Plan [2024]). Implementation of these measures would reduce impacts to wetlands or riparian habitat to less than significant.

No trees are located within the Project footprint, and no tree removal is proposed as part of the Project. Also, the proposed Project would not conflict with any local plans or ordinances protecting biological resources. Therefore, the Project would not conflict with any local tree ordinances or policies.

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?

No Impact. The Solano Habitat Conservation Plan (2012), South Sacramento Habitat Conservation Plan (2018), and the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (2007) were reviewed, and the proposed Project activity/area is not included within any of these plans. The proposed Project would not conflict with any Habitat Conservation Plans, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans Therefore, no impact would result.

5.4.4 Mitigation Measures

Implementation of the following mitigation measures would reduce the potential for biological resource impacts to less than significant:

- MM BIO-1: Worker Environmental Awareness Program
- MM BIO-2: Best Management Practices for Biological Resources
- MM BIO-3: Biological Pre-Activity Surveys and Monitoring
- MM BIO-4. Burrowing Owl Pre-Construction Surveys and Avoidance
- MM BIO-5: Pre-Construction Swainson's Hawk Protocol Nesting Surveys
- MM BIO-6: Swainson's Hawk Off-Site Foraging Habitat Management
- MM BIO-7: Nesting Bird Pre-Construction Surveys and Avoidance
- MM BIO-8. American Badger Pre-Construction Surveys and Avoidance
- MM BIO-9. Bumblebee Pre-Construction Habitat Assessment and Avoidance Surveys
- MM BIO-10: Northwestern Pond Turtle Pre-Construction Surveys and Avoidance
- MM BIO-11: Preliminary Aquatic Resource Delineation
- MM BIO-12: Temporary Flagging or Barrier Fencing to Protect Sensitive Habitat
- MM BIO-13: Compliance with Permit Conditions for Impacts to Jurisdictional Wetlands and Waterways
- MM BIO-14: Revegetation of Temporary Work Areas
- MM BIO-15: Erosion Control Best Management Practices

5.5 CULTURAL RESOURCES

CULTURAL RESOURCES – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

5.5.1 Environmental Setting

5.5.1.1 Precontact Context

Archaeologists working in the northern region of California's Central Valley have generally recognized four major precontact periods of cultural adaptation within the last 10,000 years: Paleo-Indian, Windmiller Pattern, Berkeley Pattern, and the Augustine Pattern, as further described below.

Paleo-Indian Period (~10,000 to ~4,500 years before present). Due to the rapid accumulation of alluvial (stream-deposited) sediments that occurred during the late Holocene epoch, there exists very little archaeological data regarding early human occupation of the northern region of the Central Valley during the "Paleo-Indian" period (Ragir, 1972). While humans likely inhabited the region as early as 10,000 years ago, physical evidence of these early occupations would likely be deeply buried. Archaeological remains from the Paleo-Indian period have been grouped into what is called the Farmington Complex, which is characterized by core tools and large, reworked percussion flakes (large chunks removed from a stone using blunt force). Populations during this time were likely small and mobile, and the subsistence strategy employed by these early peoples is generally thought to be centered around the exploitation of large game.

Windmiller Pattern - Early Period (~4,500 to ~2,500 years before present). The human settlement strategy of the Windmiller Pattern in the Central Valley was predominantly riverine, with most sites found on the valley floor along rivers or marshes. Other Windmiller Pattern sites have been identified atop small knolls above floodplains (Martin and Self, 2002). The archaeological record contains

examples of numerous projectile point forms and ground stone artifacts, which are associated with processing wild seeds and acorns (Ascent Environmental, 2018). Mortuary practices of the Windmiller Pattern typically involved burial mounds. Specific items found in association with Windmiller Pattern burials include large, stemmed-type projectile points, fishing weights and bone hooks, stone pipes, charm stones, quartz crystal, red ocher pigment, and shell beads.

Berkeley Pattern - Middle Period (~2,500 to ~1,500 years ago). The distribution of Berkeley Pattern sites displays a more diverse environmental range, although riverine settings are still common. Deeply stratified midden deposits with milling and ground stone artifacts are common to Berkeley Pattern sites, indicating prolonged occupations spanning multiple generations. Berkeley Pattern sites contain projectile points predominantly made from obsidian and are non-stemmed in form, becoming progressively smaller and lighter over time and culminating in the introduction of the bow-and-arrow during the late precontact period. There is a general reduction of mortuary goods with burials; however, red ocher pigment is still found spread over burials (Fredrickson, 1973; Moratto, 1984). If mortuary goods are present, they are often utilitarian in nature and include few ornamental or ritual objects.

Augustine Pattern (~1,500 to ~150 years ago). The Augustine Pattern is characterized by a shift in the general subsistence pattern, specifically the introduction of the bow-and-arrow for hunting and acorns becoming the dominant food resource. This Pattern is typified by increased population size, expanded trade and exchange networks, and great elaboration of ceremonial and social organization, which includes the development of social stratification. Other traits associated with the Augustine Pattern are increased sedentary villages and a monetary economy that exchanged beads as currency (City of Davis, 2000). Mortuary practices continued to use flexed positioning with variable orientation, but burials included less red ocher. The number of cremations also significantly increased and were widespread at this time (Moratto, 1984).

5.5.1.2 Historic Context

The modern history of Northern California, which includes Contra Costa County, Sacramento County and Solano County, is grouped into three distinct periods: Spanish, Mexican, and American. Due to its distance from San Francisco Bay, the Project site was largely isolated from the Spanish and Mexican periods of California history. The following section briefly references major events from these periods.

Spanish Period (A.D. 1775 to 1822). The earliest overland exploration of the region was the Fages-Crespi Expedition in 1772. In 1775, Captain Manuel Ayala's expedition explored the San Francisco Bay and later ventured up the Sacramento and San Joaquin rivers in search of suitable sites to establish

missions. In 1776, Mission San Francisco de Asís (Mission Dolores) in San Francisco was established as the region's first mission (Martin and Self, 2002). The missions functioned as procurement and dispersal hubs for local economic resources, and as military outposts and proxies of secular governance. The establishment of the mission system decimated local villages and dramatically transformed the lives of Native peoples from throughout California. Untold numbers of Native people were killed outright or enslaved – brought into the missions as "neophytes" for both labor and forced conversion into the Catholic faith. Disease epidemics also ravaged the people housed in the missions, further fracturing communities and culture.

In 1808 Gabriel Moraga led an expedition from Mission San Jose to the northern Sacramento Valley. Another expedition, led by Father Narciso Duàan and accompanied by Spanish explorer Luis Argüello, sailed up the Sacramento River to a point near the confluence with the Feather River (Hoover et al., 2002).

Mexican Period (A.D. 1822 to 1850). In 1821, Mexico declared independence from Spain; a year later, California became a Mexican Territory. After the missions were secularized in 1834, lands were gradually transferred to private ownership via a system of land grants (Hoover et al., 2002). The portion of the Project site west of the Sacramento River is located in the Rancho Los Ulpinos Land Grant, which included 17,726 acres patented to John Bidwell by Governor Manuel Micheltorena in 1844 (Hoffman, 1862). At the end of this period, Euro-Americans immigrated from the Midwest and East Coast, largely due to California's rich resources. In 1846, these new settlers initiated the Bear Flag Revolt to declare California a republic. Shortly thereafter, war broke out between Mexico and the United States. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo, which established California as a United States territory. While the Treaty promised all property belonging to the Californios would be respected, the Land Act of 1851 required all land grant owners to prove their title and ownerships rights. Bidwell filed a claim and patented the Rancho Los Ulpinos Land Grant in 1866.

American Period (A.D. 1850 to Present). The discovery of gold at Sutter's Mill (also owned by John Sutter) in 1848 generated a massive influx of Euro-Americans as well as other nationalities into the new territory. The increased demand for supplies and provisions also increased the volume and market value of livestock, timber, and agricultural products.

Meanwhile, Rancho Los Ulpinos was subdivided into twenty parcels and sold in 1855. In 1857, Colonel N. H. Davis purchased a parcel and founded the town of Rio Vista that included a wharf for daily steamships traveling up to Sacramento. In the fall of 1861, the town of Rio Vista flooded, and a new site was established on higher ground in 1862 which included Rio Vista's first public school and Catholic and Congregational churches (DeGeorgey, 2015).

5.5.1.3 Records Search Results

Padre ordered records searches from the Northwest Information Center (NWIC) at Sonoma State University on April 16, 2024, January 23, 2025, and on March 6, 2025, and from the North Central Information Center (NCIC) at California State University, Sacramento on April 16, 2024, and on March 6, 2025. These centers are affiliates of the California Historical Resources Information System (CHRIS), and the official repository of cultural resource records and reports for 24 counties, including Solano, Sacramento, and Contra Costa counties that encompass the Project sites.

The records search included a review of all recorded historic-era and pre-contact archaeological sites within a 0.5-mile radius of the Project site, as well as a review of known cultural resource surveys and technical reports (Appendix D). The State Historic Property Data Files, National Register of Historic Places, National Register of Determined Eligible Properties, California Points of Historic Interest, and the California Office of Historic Preservation Archaeological Determinations of Eligibility were also analyzed.

The records search revealed that portions of the Project site overlap with the Sacramento River Tribal Cultural Landscape (P-34-005225), the Bradford Island Levee (P-07-004989), the Twitchell Island Levee (P-34-000493), and the Sherman Island Levee (P-07-000553). Additionally, one historic benchmark was recorded within a 0.5-mile radius of the Project site. The eligibility status presented in Table 5.5-1 reflects eligibility information identified in the records search for listing in the California Register of Historic Resources (CRHR) and/or National Register of Historic Places (NRHP).

Table 5.5-1. Previously Recorded Cultural Resources within the Project Site and Buffer

Primary No.	Trinomial No.	Description	Location	Eligibility Status (CRHR/NRHP)
P-07-004989	-	Bradford Island Levee (Contra Costa County)	In Project site	Considered eligible for CRHR; not formally evaluated
P-34-000493	CA-SAC-466H	Twitchell Island Levee (Sacramento County)	In Project site	Considered eligible for CRHR; not formally evaluated

Primary No.	Trinomial No.	Description	Location	Eligibility Status (CRHR/NRHP)
P-34-000553	CA-SAC-496H	Sherman Island Levee (Sacramento County)	In Project site	Not eligible for NRHP or CRHR
P-34-005225	-	Sacramento River Tribal Cultural Landscape (Sacramento and Solano counties)	In Project site	Eligible for NRHP and CRHR
P-48-000800	-	Historic Benchmark (Solano County)	0.32 miles east of Project site	Not eligible for CRHR

Sources: NWIC, 2024, 2025; NCIC 2024, 2025

The records search also revealed that 23 cultural resource studies have been completed within the 0.5-mile search radius. Of these, eight studies cover portions of the Project site. Additional details about the previous studies are provided in a summary report (Appendix D).

5.5.1.4 Buried Site Sensitivity Assessment

Padre also reviewed buried site sensitivity analyses completed for previous projects on the east and west sides of the Sacramento River (Thomas, 2013; Elliot, 2015). Historically, the Project site was a swampy portion of the Sacramento-San Joaquin Delta and did not represent a formerly stable land surface that would have been available for human occupation. In the late-1920s, the swamp was covered by 20 to 40 feet of sediments dredged from the Sacramento River (Thomas, 2013). Additionally, the proximity of the Project site to the river channel, the low elevation, and the absence of soil development suggests a low sensitivity for buried cultural resources (Elliott, 2015). Thus, the potential to encounter buried cultural resources is low.

5.5.2 Regulatory Setting

Federal, state, and local regulations, laws, policies, or other mandatory guidance from a lead or responsible agency pertaining to cultural resources are summarized below to provide regulatory context for the Project. Where applicable these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.5.2.1 Federal

National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq. and implementing regulations (Protection of Historic Properties; 36 C.F.R. Part 800)

(applies only to Federal undertakings). Archaeological resources are protected through the NHPA and its implementing regulations (Protection of Historic Properties; 36 CFR Part 800), the California Archaeological Historic Preservation Act, and the Archaeological Resources Protection Act. The NHPA presents a general policy of supporting and encouraging the preservation of historic and archaeological sites for present and future generations by directing federal agencies to assume responsibility for considering the historic resources in their activities. The state implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs coordinated by the California Office of Historic Preservation (OHP) in the State Department of Parks and Recreation, which also advises federal agencies regarding potential effects on historic properties.

The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions, including commenting on federal undertakings. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 U.S.C. § 470w [5]).

5.5.2.2 State

California Environment Quality Act (CEQA) (Public Resources Code, §§ 21000 et seq.). CEQA Section 21084.1 provides that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. Historical resources may include archaeological resources. Mitigation measures for significant impacts to historical resources must be identified and implemented if feasible. CEQA statute and guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the CRHR or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the CRHR.
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- A resource identified as significant (i.e., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code §5024.1(g) (DPR Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or

- Any object, building, structure, site, area, place, record or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the CRHR (CEQA Guidelines §15064.5).

In addition, Public Resources Code Section 21083.2 establishes CEQA requirements for archaeological resources. Section 21083.2(i) authorizes lead agencies to adopt procedures for the treatment of archaeological resources accidentally discovered. Procedures may include immediate evaluation of the find by a qualified archaeologist, provision of contingency funding and adequate time for recovery or preservation of any unique archaeological resource, and continuation of construction activities in portions of the project site that will not affect the discovered resource. Projects subject to CEQA commonly incorporate inadvertent discovery measures to ensure compliance with Public Resources Code Section 21083.2(i) and to reduce potential impacts to archaeological resources (RR CUL-1/RR TCR-1).

California Register of Historical Resources (CRHR) (Pub. Resources Code § 5024.1). The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (Public Resources Code, § 5024.1, subd. (a)). CRHR eligibility criteria are modeled after National Register of Historic Places criteria but focus on resources of statewide significance. Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined to be eligible for, or listed in, the NRHP. To be eligible for the CRHR, property must be significant at the local, state, or federal level under one or more of the following criteria (State CEQA Guidelines, § 15064.5, subd. (a)(3)):

- **Criterion 1**: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- **Criterion 2**: Is associated with the lives of persons important in California's past.
- **Criterion 3**: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or

- **Criterion 4**: Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the CRHR must meet one of the criteria of significance above and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. A historic resource that may not retain sufficient integrity to meet the criteria for listing in the National Register of Historic Places, may still be eligible for listing in the CRHR. Properties listed, or formally designated as eligible for listing, on the National Register are automatically listed on the CRHR, as are certain State Landmarks and Points of Interest. A lead agency is not precluded from determining that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1, subdivision (j), or 5024.1 (State CEQA Guidelines, § 15064.5, subd. (a)(4)).

Codes Governing Human Remains (Health & Saf. Code § 7050.5; Pub. Resources Code §§ 5097.94, 5097.98). The disposition of human remains is governed by Section 7050.5 of the California Public Health and Safety Code **(RR CUL-2/TCR-2)**; Public Resources Code, Sections 5097.94 and 5097.98 **(RR CUL-3/TCR-3)**; and the California Native American Historical, Cultural, and Sacred Sites Act. These legislations place the inadvertent discovery of human remains within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the county coroner must be notified immediately and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, must immediately notify those persons believes to be the Most Likely Descendants (MLD) from the deceased Native Americans so they can inspect the burial site and make recommendations for treatment or disposal.

5.5.2.3 Local

Solano County General Plan (2008)

Chapter 4: Resources

Implementation Programs:

- **RS.I-25:** Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archaeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation may include:

- Having a qualified archaeologist present during initial grading or trenching (monitoring).
- Redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources).
- Capping the site with a layer of fill; and/or
- Excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.
- Alert applicants for permits within early settlements areas to the potential sensitivity. If significant archaeological resources are discovered during construction or grading activities, such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation.

- **RS.I-27:** Refer to the state Senate Bill 18 guidelines and requirements regarding cultural resources. Programs the County will engage in may include:
  - Ensuring local and Native American governments are provided with information early in the planning process,
  - Working with Native American governments to preserve and protect Native American cultural sites by designating them as open space where possible,
  - Providing management and treatment plans to preserve cultural places, and
  - Working with Native American groups to manage their cultural places.

Sacramento County General Plan (2011)

Conservation Element

Section VIII: Cultural Resources

- **Policy CO-152:** Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.
- **Policy CO-153:** Refer projects with identified archaeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall

coordinate with the Native American Heritage Commission in developing recommendations.

- **Policy CO-154:** Protection of significant pre-contact, ethnohistoric, and historic sites within open space easements to ensure that the resources are preserved in situ for perpetuity.
- **Policy CO-155:** Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archaeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off-site reinterment in the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.
- **Policy CO-156:** The cost of all excavation conducted prior to completion of the project shall be the responsibility of the project developer.
- **Policy CO-157:** Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.
- **Policy CO-158:** As a condition of approval of discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.
- **Policy CO-159:** Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.
- **Policy CO-170:** Cooperate with other agencies to enforce laws and aggressively prosecute illegal collection of artifacts.

Contra Costa County General Plan (2024)

Chapter 7: Conservation, Open Space, and Working Lands Element

- **Policy COS-P10.7:** Require significant historic, archaeological, and paleontological resources to be either preserved onsite or adequately documented as a condition of removal. Any documentation of historic resources shall be conducted in accordance with Historic American Building Survey (HABS) Level III standards, as defined by the US Secretary of the Interior.
- **Policy COS-P10.8:** Emphasize native people, immigrant populations, and the environmental and cultural heritage of the region as significant themes related to historic preservation. Consider natural,

agricultural, ranching, mining, commercial, industrial, residential, political, political, transportation, recreation, education, maritime, and military themes when evaluating the significance of historic resources.

- **Policy COS-P10.9:** Ensure new cultural/historic resource evaluations consider potential social and cultural significance of resources in addition to architectural significance.

5.5.3 Impact Analysis

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

Less Than Significant with Mitigation. The records search revealed that portions of the Project site overlap with the Sacramento River Tribal Cultural Landscape (P-34-005225), the Bradford Island Levee (P-07-004989), the Twitchell Island Levee (P-07-000493), and the Sherman Island Levee (P-07-000553). Of these resources, the Sacramento River Tribal Cultural Landscape was formally evaluated as part of the Isleton Water Distribution Improvement Project in 2018 and recommended eligible for listing in the NRHP and the CRHR. The Twitchell Island and Bradford Island levees were previously recorded but have not been formally evaluated for CRHR eligibility. The Sherman Island Levee has been evaluated as part of a 2006 study of the larger levee system and recommended not eligible for listing on the CRHR; thus, it does not qualify as a historical resource under CEQA.

Specifically, the proposed Project includes approximately 30 acres, or less than 0.1 percent, of the 333,592-acre Sacramento River Tribal Cultural Landscape. Additionally, the Project would have the potential to impact approximately 50 square feet of the Bradford Island Levee (eligible for CRHR listing) and approximately 164 square feet of the Sherman Island Levee (recommended as not eligible for CRHR listing). Finally, proposed access routes will overlap with the Bradford Island Levee and the Twitchell Island Levee (both eligible for CRHR listing); however, since no road improvements to the levees are proposed, impacts are not anticipated.

The proposed Project site within the Sacramento River Tribal Cultural Landscape represents less than 0.1 percent of the overall cultural landscape; therefore, the Project will not impact the resource's ability to communicate its significance. The portions of the proposed Project that overlap with the Bradford Island Levee and the Twitchell Island Levee have been previously disturbed by road and levee maintenance; thus, the Project will not cause any new impacts nor alter the current condition of these resources. The buried site sensitivity analyses reviewed for the Project indicate a low potential for buried cultural resources within the Project site.

However, there remains the potential for significant cultural materials and/or human remains to be exposed during Project activities. To reduce potential impacts from ground disturbance to cultural resources, CRPC shall implement **MM CUL-1/TCR-1** and **MM CUL-2/TCR-2** to minimize destruction or damage to these resources. With the implementation of these measures, the impacts would be less than significant.

MM CUL-1/TCR-1: Worker Cultural and Tribal Cultural Resource Awareness Program. All persons employed or otherwise working in the Project area shall attend a Cultural and Tribal Cultural Resource Awareness Program provided by CRPC before performing any work. The program shall be developed in coordination with interested Native American tribes and consist of a training from a local Tribal representative(s) and Qualified Archaeologist or Health, Safety, and Environmental representative. An employee-training program would be conducted before groundbreaking to explain all federal, state, local regulatory and CRPC requirements, as well as measures to avoid or minimize effects on cultural resources. Workers would be informed about the importance of maintaining designated protected areas. All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.

The training shall include, at a minimum:

- A brief overview of the cultural sensitivity of the Project area and surrounding area;
- What resources or tribal cultural resources could potentially be identified during ground disturbance;
- The protocols that apply in the event unanticipated cultural or tribal cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated;
- The requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans, including discussion of appropriate behaviors and responsive actions consistent with tribal values;
- Consequences in the event of noncompliance.

CRPC shall maintain records of all completed training, including signed attendance sheets and training materials. These records shall be submitted to CalGEM prior to ground-disturbing activities and shall be made available to CalGEM and participating Tribes upon request.

MM CUL-2/TCR-2: Discovery of Previously Unknown Cultural or Tribal Cultural Resources. In accordance with Public Resources Code Section 21083.2(i), provisions shall be made for accidental discovery of cultural resources **(RR CUL-1/TCR-1)**.

If intact cultural resources are uncovered during implementation of the Project, all earth-disturbing activities within 100 feet of the find shall be temporarily suspended or redirected until a County-approved archaeologist has evaluated the nature and significance of the discovery. If the discovery is suspected to be human remains, the procedures outlined in **MM CUL-3/TCR-3** shall be followed.

In the event that a potentially significant cultural resource is discovered, CRPC, CalGEM, and any local, state, or federal agency with approval or permitting authority over the Project that has requested or required, such notification shall be notified immediately or within 48 hours upon discovery.

The location of the discovery must be kept confidential, and measures shall be taken such as the establishment of an Environmentally Sensitive Area (ESA) using fencing or other suitable material to ensure that the area is secured to minimize site disturbance and potential vandalism. Impacts to previously unknown significant cultural resources shall be avoided through preservation in place if feasible.

A treatment plan developed by the archaeologist shall be submitted to CalGEM staff for review and approval. A treatment plan typically includes protocols for the temporary recovery of resources after Project completion, a research design and excavation methodology to remove resources that cannot be avoided, and a description of reporting procedures. If the archaeologist believes that damaging effects to the archaeological resource will be avoided or minimized, then work in the area may resume.

Tribal Cultural Resources (TCRs), or resources of cultural significance to Native American tribes include, but are not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits. If a discovery is determined to be a TCR, the culturally affiliated Tribe shall consult with CalGEM to identify the boundaries of the resource and determine appropriate preservation or avoidance measures, including redesign or adjustment of construction activities and long-term management. If avoidance is infeasible, a reburial location in proximity to the find where future disturbance is not anticipated shall be identified. CRPC and CalGEM shall facilitate respectful reburial, including providing a location consistent with Tribal preferences,

excavation, and assistance with reburial as requested. Permanent curation of TCR materials shall not occur without written approval from the Tribe. Work at the TCR discovery location shall not resume until authorization is granted by CalGEM in coordination with the Tribe.

All discoveries shall be documented in a Department of Parks and Recreation (DPR) 523 form within two weeks and submitted in a timely manner to the appropriate CHRIS center.

Treatment of TCRs in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).

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

Less Than Significant with Mitigation. The records search did not identify any additional archaeological resources within the Project site. Buried site sensitivity analyses indicate a low potential for buried cultural resources in the Project area. Therefore, no impacts to known archaeological resources are anticipated.

However, there remains a potential for significant archaeological resources to be uncovered during Project activities. To reduce potential impacts from ground disturbance to archaeological resources, CRPC shall implement **MM CUL-1/TCR-1** and **MM CUL-2/TCR-3** to minimize destruction or damage to these resources. With the implementation of these measures, the impacts would be less than significant.

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

Less Than Significant with Mitigation. No cemeteries or potential human remains were identified onsite. The following mitigation measure is proposed in the event that a discovery of potential human remains is discovered during the course of the Project:

MM CUL-3/TCR-3: Unanticipated Discovery of Human Remains. Human remains include bones or bone fragments, ashes and soils from ceremonial burning, associated funerary objects, unassociated funerary objects, grave goods, and items of cultural patrimony. If human remains are encountered during project activities, all provisions of California Health and Safety Code Section 7050.5 **(RR CUL-2/TCR-2)** and California Public Resources Code Section 5097.98 **(RR CUL-3/TCR-3)** shall be followed.

Work shall stop immediately within 100 feet of the discovery, regardless of whether the construction is being actively monitored. A County-approved archaeologist must be contacted within 24 hours, who shall consult with the County Coroner. In addition, a culturally affiliated Tribal Representative and CalGEM staff shall be notified within 24 hours.

The Tribal Representative, in coordination with CalGEM shall determine if the find qualifies as a TCR pursuant to Public Resources Code Section 21074, and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary.

If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness are discovered during construction activities, the County Coroner and the culturally affiliated Tribe shall be contacted immediately. The County Coroner shall notify the NAHC within 24 hours of this determination and a Most Likely Descendant (MLD) shall be identified.

No work shall proceed in the discovery area until consultation is complete and procedures to avoid or recover the remains have been implemented. CRPC shall secure and protect the area from further disturbance and work shall not resume in the discovery area until treatment measures are completed. Typical avoidance procedures include Project redesign to avoid the remains or deeding the area into a permanent conservation easement. If avoidance is not feasible, recovery of the remains will be planned with the MLD.

Treatment and disposition of human remains in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).

CRPC shall submit agency coordination documentation to CalGEM to verify compliance. Discovery reports and associated correspondence shall be retained by CRPC and provided to CalGEM and other applicable agencies upon request.

5.5.4 Mitigation Measures

Implementation of the following mitigation measures would reduce the potential for cultural resource impacts to less than significant:

- MM CUL-1/TCR-1: Worker Cultural and Tribal Cultural Resource Awareness Program
- MM CUL-2/TCR-2: Treatment of Unknown Cultural or Tribal Cultural Resources
- MM CUL-3/TCR-3: Unanticipated Discovery of Human Remains

5.6 ENERGY

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

5.6.1 Environmental Setting

The proposed Project involves the construction of 83 new natural gas wells, as well as associated equipment, facilities, and infrastructure, within the boundary of the existing Rio Vista Gas Field in parts of Solano, Sacramento, and Contra Costa counties. Each county has different energy resources that provide power to residents. The 2022 energy generation totals as reported by the California Energy Commission (CEC) are listed below. All totals are in gigawatt hours (GWh).

Solano County

- 388 GWh from natural gas
- 2,733 GWh from renewable sources

Sacramento County

- 416 GWh from large hydroelectric
- 2,769 GWh from natural gas
- 679 GWh from renewable sources

Contra Costa County

- 14,332 GWh from natural gas
- 17 GWh from waste heat
- 94 GWh renewable sources (CEC, 2022).

The Project area is provided with electricity and natural gas by Pacific Gas & Electric (PG&E). Collectively, the energy generation totals included above illustrate that natural gas remains the dominant energy source within the Project

region, demonstrating the proposed Project's compatibility with existing infrastructure. In addition, the Project would not utilize PG&E electricity or natural gas. Any new Project equipment running on natural gas will use field-produced gas and portable generators will be used as needed during the construction phase of the Project.

5.6.2 Regulatory Setting

5.6.2.1 Federal

There are no federal laws, regulations, or policies pertaining to energy that are relevant to the Project.

5.6.2.2 State

California Integrated Energy Policy (Pub. Resources Code § 25301 et seq.). SB 1389 requires the CEC to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (Public Resources Code, § 25301(a)). The CEC adopts an Integrated Energy Policy Report every two years and an update every other year.

Clean Energy and Pollution Reduction Act (Pub. Resources Code §§ 25320-25341; Pub. Util. Code §§ 454.51, 399.11-399.33). This Act requires that the amount of electricity generated and sold to retail customers from renewable energy resources be increased to 50 percent by December 31, 2030, and that statewide energy efficiency savings in electricity and natural gas by retail customers be doubled by January 1, 2030.

5.6.2.3 Local

Solano County General Plan (2008)

Chapter 8: Public Facilities and Services Element

- **Policy RS.G-5:** Ensure availability of affordable energy supplies and require efficiency and conservation measures to minimize energy consumption.
- **Policy RS.P-58**: Require the siting of energy facilities in a manner compatible with surrounding land uses, including Travis Air Force Base, and in a manner that will protect scenic resources.

Sacramento County General Plan (2022)

Chapter 7: Energy Element (2019b)

- **Policy I 15.3: Adequate Energy Supplies.** Work with local utility providers to ensure adequate and affordable supplies of energy are available for existing and future development.

5.6.3 Impact Analysis

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

Less than Significant Impact With Mitigation. The proposed Project requires the use of heavy equipment and motor vehicles that are powered by non-renewable petroleum-based fuel sources. As such, Project activities would result in a temporary increase in the consumption of energy resources (e.g. gasoline and diesel fuel) during construction. However, implementation of measures included in **MM AQ-1** would result in increased energy efficiency for equipment utilized during construction activities through the following practices:

- All construction equipment will be properly tuned and maintained prior to and for the duration of onsite operation.
- Equipment idling time will be limited to five minutes to save fuel and reduce emissions.
- Existing power sources will be utilized for Project activities (as feasible) including clean fuel generators.

While implementation of the Project would represent a temporary increase in energy consumption during construction, energy would not be consumed in a wasteful or inefficient manner over the lifetime of the Project. Project activities would occur intermittently over approximately 6.8 years, with energy consumption varying by phase. Drilling operations and well completion activities represent the phases with the highest short-term energy demands, while site preparation and pipeline installation require comparatively less energy. The Project does not include use of energy from the existing power grid. Operation of the proposed gas wells would provide additional natural gas resources to the existing distribution system from the Rio Vista Gas Field. In addition, portable generators would be utilized as needed during the construction phase of the Project.

Implementation of energy efficient practices within **MM AQ-1** would reduce potential impacts to less than significant.

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

Less than Significant Impact. The proposed Project would not conflict with any adopted local policies or programs that promote renewable energy or energy conservation, as it would neither consume significant grid energy nor alter energy infrastructure. The Project would be compatible with local policies (including but not limited to: Solano County General Plan Policy RS. G-5 and Sacramento County Policy I 15.3 regarding ensuring the availability of affordable energy supplies. Neither the construction nor operation of the proposed Project would prevent the state from reaching its renewable energy goals; therefore, a less than significant impact would result, and no mitigation would be required.

5.6.4 Mitigation Measures

The Project would not result in significant impacts on energy; however, **MM AQ-1** will be implemented to increase efficiency and further reduce fuel consumption associated with heavy equipment use.

- MM AQ-1: Implement Basic Construction Emissions Control Practices and Best Management Practices

5.7 GEOLOGY AND SOILS

GEOLOGY AND SOILS – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of	☐	☐	☐	☒

GEOLOGY AND SOILS – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

5.7.1 Environmental Setting

5.7.1.1 Project Area Geomorphology and Geology

The Project area is located within the central portion of the Great Valley geomorphic province of California. The Great Valley geomorphic province is an alluvial plain approximately 50 miles wide and 400 miles long through central California. The Great Valley is divided into the Sacramento Valley to the north, drained by the Sacramento River, and the San Joaquin Valley to the south, drained by the San Joaquin River. The valleys formed due to the uplift of two mountain ranges, the Coast Ranges to the west and the Sierra Nevada to the east.

The Project area spans Solano, Sacramento and Contra Costa counties and is located within the California Delta at the confluence of the Sacramento and San Joaquin Rivers. Before modern flood control infrastructure (e.g., levees, dams), the Sacramento and San Joaquin Rivers were confined mostly by natural levees which formed along the rivers from sediment deposited during floods. Higher-energy sediments accumulated near the river channels, while fine-grained silts and clays settled in lower-energy environments such as flood basins and abandoned channels, resulting in highly variable deposits. Today, artificial levees regulate hydrology and sediment transport and prevent low-lying agricultural land from flooding. The main geomorphic process in these low-lying agricultural areas is land subsidence due to the decomposition of organic deposits, whereas fluvial erosion and deposition are the primary geomorphic processes on and adjacent to levees. Although these geomorphic processes of subsidence and fluvial erosion are ongoing, they occur gradually and are monitored and managed through existing Delta levee maintenance programs (DWR, 2025b), so they would not pose stability risks to existing or proposed infrastructure.

According to the USGS Geologic Map of the Sacramento-San Joaquin Delta (Atwater, 1982), the Sacramento River Channel and its banks in the Project area

consist of Holocene-age dredge spoils (Qds) which consists of sand, silt, clay, and peat deposited in the early 20th century. Additional geologic units include Holocene-age natural levee deposits (Ql), Holocene-age Bay mud deposits (Qpm), and the underlying Pleistocene-age Montezuma Formation (Qmz). The Contra Costa portion of the Project area is located on Bradford Island and is mapped as man-made and tidal deposits (Atwater, 1982).

5.7.1.2 Faulting and Strong Seismic Ground Shaking

The California Department of Conservation (DOC) California Geological Survey (CGS) maps geologic hazard areas within Solano, Sacramento, and Contra Costa counties. The Project area is not located within an Alquist-Priolo Earthquake Zone (CGS, 2025). The closest active faults to the Project location are the Clayton Fault (Holocene displacement) located approximately 19 miles to the southwest, the Concord Fault (historic displacement) located approximately 22 miles to the southwest, and Greenville Fault (historic displacement) located approximately 23 miles to the west of the Project site.

Additionally, based on published data and current understanding of regional tectonics, seismic shaking at the Project site could also originate from the Hayward-Rodgers Creek Fault System located approximately 35 miles to the southwest, which has a 72 percent chance of experiencing a magnitude 6.7 or greater earthquake before 2043 (Aagaard et al., 2016).

5.7.1.3 Seismic Related Ground Failure, including Liquefaction

Liquefaction occurs when loosely packed, water-saturated sediments lose strength due to strong ground shaking, potentially causing structural damage (Atwater, 1982). Poorly drained sandy, silty, and gravelly soils are particularly susceptible. CGS identifies liquefaction hazard zones based on surficial deposits and shallow groundwater tables.

Based on a review of CGS seismic and liquefaction hazard data and maps, only the southernmost portion of the Project site located south of the San Joaquin River on Bradford Island (Contra Costa County) is designated by CGS as a liquefaction hazard zone (CGS, 2025). The portions of the Project north of the San Joaquin River have not been evaluated for liquefaction, either because CGS has not yet evaluated them in detail but plan to do so, or CGS does not anticipate levels of ground shaking and subsurface conditions that would warrant mapping; in such areas, any additional evaluation is addressed through supplementary studies or site-specific geotechnical studies. Site-specific subsurface investigations identified potentially liquefiable soil on both sides of the Sacramento River, just downstream of the City of Rio Vista, with estimated liquefaction-induced settlement during an earthquake ranging from approximately 2.7 to 4.5 inches on the west side of the river and 3.3 to 5.4 inches

on the east side, with a similar amount of settlement expected during future seismic events (Kleinfelder, 2020).

5.7.1.4 Landslides

Landslides are downward and outward movements of slope forming materials which may be rock, soil, artificial fill, or combinations of such materials, typically occurring in areas with steep slopes or where past slope failures have occurred. Slides and earth flows generally do not develop on nearly flat ground, as slopes must be sufficiently steep and continuous, often greater than approximately 15 percent to fail. The Project area is composed predominantly of low-relief Delta flatlands, so geomorphic conditions across the Project area are generally not conducive to landslides.

Based on a review of CGS landslide hazard maps, no portion of the Project area is designated by CGS as a landslide hazard zone (CGS, 2025). The portions of the Project north of the San Joaquin River have not been evaluated for landslides, either because CGS has not yet evaluated them in detail but plan to do so, or CGS does not anticipate levels of ground shaking and subsurface conditions that would warrant mapping; in such areas, any additional evaluation is addressed through supplementary studies or site-specific geotechnical studies. According to USGS landslide and earthflow data of the San Francisco Bay Region, the only portion of the Project area identified as having any landslide susceptibility is the Montezuma Hills north of the Sacramento River (Solano County), which is classified as an area of "few landslides" (ABAG, 2020).

5.7.1.5 Subsidence

Subsidence is the gradual settling or sudden sinking of the land surface from changes that take place underground, primarily from groundwater or oil pumping. Land subsidence in the California Delta (Solano, Sacramento, and Contra Costa counties) is primarily caused by oxidation of organic or peat deposits (Deverel, 2016). CalGEM monitors subsidence in gas fields and regulates gas withdrawal and re-pressurization of the fields. There is no comprehensive land subsidence monitoring program in California; however, according to TRE ALTAMIRA InSAR Subsidence Data, remote sensing of ground elevation displacement estimates that vertical displacement in the Project area ranged from -0.1 feet to 0.1 feet between October 2023 and October 2024 (DWR SGMA Data Viewer, 2025a). This InSAR dataset reflects measurements at discrete monitoring points located within the footprint of the Project, rather than the entire Project area.

5.7.1.6 Soils

Based on a review and analysis of the Natural Resources Conservation Service (NRCS) Web Soil Survey for the Project area (NRCS, 2025), the soil types within the Project site include:

(1) Diablo-Ayar clays, 2 to 9 percent slopes (map unit symbol DaC in Solano County), which is well drained, exhibits moderately low to moderately high permeability, and is not hydric;

(2) Diablo-Ayar clays, 9 to 30 percent slopes, eroded (map unit symbol DaE2 in Solano County), which is well drained, exhibits moderately low to moderately high permeability, and is not hydric;

(3) Gazwell mucky clay, partially drained, 0 to 2 percent slopes (map symbol 155 in Sacramento County), which is very poorly drained, exhibits moderately high to high permeability, and is hydric;

(4) Valpac sandy loam, mucky substratum, partially drained, 0 to 2 percent slopes (map unit symbol 232 in Sacramento County), which is poorly drained, exhibits moderately low permeability, and is hydric;

(5) Columbia silt loam, drained, 2 to 5 percent slopes (map unit symbol 123 in Sacramento County), which somewhat poorly drained, exhibits moderately high to high permeability, and is hydric; and

(6) Rindge mucky silt loam, partially drained, 0 to 2 percent slopes, major land resource area (MRLA) 16 (map unit symbol Rd in Contra Costa County and 201 in Sacramento County), which is very poorly drained, exhibits moderately high permeability, and is hydric.

5.7.1.7 Soil Erosion

The majority of the Solano County portion of the Project area is comprised of Diablo Ayar clays, 2 to 9 percent slopes soil type. The NRCS provides a "moderate" rating for erosion risk for this soil type.

The majority of the Sacramento County portion of the Project area is comprised of Gazwell mucky clays, partially drained, 0 to 2 percent slopes soil type. The NRCS provides a "slight" rating for erosion risk for this soil type.

The majority of the Contra Costa County portion of the Project area is comprised of Rindge mucky silt loam, partially drained, 0 to 2 percent slopes soil type. The NRCS provides a "severe" rating for erosion risk for this soil type.

5.7.1.8 Expansive Soils

Expansive soils shrink and swell with moisture changes, potentially affecting structures. The Diablo Ayar clays (Solano County) and the Gazwell mucky clays (Sacramento County) are classified as non-expansive due to their low shrink-swell potential (NRCS, 2025). The Rindge mucky silt loam in Contra Costa County has no documented classification; however, based on its organic-rich composition and hydric characteristics, it is expected to have low to moderate expansion potential (NRCS, 2025).

5.7.1.9 Unique Geological Features/Paleontological Resources

The project site is located within the Sacramento-San Joaquin River Delta and contains several notable geological features. The structural configuration is defined by a broad, flat, elongate faulted dome with a north-northwest axis, which has facilitated natural gas accumulation (Burroughs, 1968). A key structural element in the region is the Midland Fault Zone, a steeply west-dipping normal fault that trends north-south, extending through Solano, Sacramento, and Contra Costa counties. This fault offsets Paleogene-aged formations, including the Martinez, Meganos, and Domengine Formations, influencing hydrocarbon deposition and trapping (Graymer, 2002). The Montezuma Hills Graben, located in the southwestern portion of the Sacramento Basin (Solano County), represents a deep, asymmetric, south-plunging graben, which influences local sediment deposition and gas accumulation patterns (Burroughs, 1968). The Project site produces from six stratigraphic zones of Paleogene age: Domengine Formation, Markley Sandstone, Nortonville Shale, Sidney Zone, Peterson Zone, and McCormick Sand. These units are part of the Great Valley Sequence, a thick assemblage of marine sedimentary formations that serve as primary gas reservoirs in the region (BDCP, 2013).

Based on a review of available information and the University of California Museum of Paleontology (UCMP) Berkeley Mapper database, the Project Site is not specifically documented for significant paleontological sites. However, the surrounding region contains geological formations with paleontological resources (UCMP, 2025). The Montezuma Formation, found in the Montezuma Hills southwest of Rio Vista, dates to the Early Pleistocene and has been identified as having high paleontological sensitivity, suggesting the potential for significant fossil discoveries. Similarly, the San Pablo Group, located along the southwestern border of the Sacramento and San Joaquin Delta, consists of Late Miocene marine sediments that have yielded vertebrate fossils and are considered to have high paleontological sensitivity (BDCP, 2013).

5.7.2 Regulatory Setting

Federal, state, and local regulations, laws, rules, policies, or other mandatory guidance from a lead or responsible agency pertaining to geology and soils are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.7.2.1 Federal

International Building Code. The International Code Council published the International Building Code (IBC) in 2000 which superseded the formerly recognized Uniform Building Code (UBC). The IBC establishes minimum requirements for building systems using prescriptive and performance-related

provisions and provides an international forum for discussion and deliberation about building design, construction methods, safety, performance requirements, technological advancements and innovative products. This code is intended to establish provisions that adequately protect public health, safety and welfare; that do not unnecessarily increase construction costs; that do not restrict the use of new materials, products or methods of construction; and that do not give preferential treatment to particular types of classes of materials, products or methods of construction. The IBC has been adopted by many jurisdictions, including the State of California and Solano, Sacramento, and Contra Costa counties, in their building codes.

Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.). The CWA, formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Several provisions of the CWA regulate activities that could affect soil erosion and chemical composition of water. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA § 402). Projects that disturb one or more acres of land are required to obtain NPDES coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit). Construction General Permits are implemented and enforced by the California Water Resources Control Board under Order No. 2022-0057-DWQ. The General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes Best Management Practices described as Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to protect storm water runoff **(RR HYDRO-4)**. Requirements of the federal CWA and associated SWPPP requirements are described in further detail in Section 5.10 (Hydrology and Water Quality).

Earthquake Hazards Reduction Act (42 U.S.C. §§ 7701–7706). The National Earthquake Hazards Reduction Program (NEHRP) was established by the U.S. Congress when it passed the Earthquake Hazards Reduction Act of 1977, Public Law 95– 124. At the time of its creation, Congress' stated purpose for NEHRP was "to reduce the risks of life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program." Congress recognized that earthquake-related losses could be reduced through improved design and construction methods and practices, land use controls and redevelopment, prediction techniques and early-warning systems, coordinated emergency preparedness plans, and public education and involvement programs. Since NEHRP's creation, it has become the federal government's coordinated long term nationwide program

to reduce risks to life and property in the United States that result from earthquakes. Four basic NEHRP goals are as follows:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use; and
- Improve the understanding of earthquakes and their effects.

Congress has recognized that several key federal agencies can contribute to earthquake mitigation efforts. Today, there are four primary NEHRP agencies:

- Federal Emergency Management Agency (FEMA) of the Department of Homeland Security.
- National Institute of Standards and Technology (NIST) of the Department of Commerce (NIST is the lead NEHRP agency).
- National Science Foundation (NSF); and
- USGS of the Department of the Interior.

Congress completed a review of NEHRP, resulting in the NEHRP Reauthorization Act of 2004, PL 108–360. PL 108–360 directed that NEHRP activities be designed to develop effective measures for earthquake hazard reduction; promote the adoption of earthquake hazards reduction measures by government agencies, standards and codes organizations, and others involved in planning and building infrastructure; improve the understanding of earthquakes and their effects through interdisciplinary research; and, develop, operate, and maintain both the Advanced National Seismic System (ANSS) and the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES). In a major new initiative, PL 108–360 also directed that NEHRP support development and application of performance-based seismic design (PBSD).

Paleontological Resources Preservation Act (16 U.S.C. § 470). Enacted to preserve paleontological resources for current and future generations on federal lands under the jurisdiction of the National Park Service, Bureau of Land Management, Bureau of Reclamation, and USFWS, this Act identifies management requirements, collection requirements, curation requirements, authorizes criminal and civil penalties, rewards and forfeiture.

Omnibus Public Land Management Act (Pub. L. No. 111-11). Public Law 111-011 at Title VI, subtitle D lays out statutory requirements for Paleontological Resources Preservation (PRP). PRP provides definitions but requires the definition of some terms and uses other terms and concepts that need further definition or details

to clarify intent or enforcement. PRP identifies management requirements, collection requirements, curation requirements, need for both criminal and civil penalties, rewards and forfeiture, and the need for confidentiality of some significant resource locations.

Other Relevant Laws

Protection of Paleontological Resources (Pub. Resources Code § 5097.5). prohibits excavation or removal of any "vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands".

Federal Pipeline Safety Regulations (49 C.F.R. pts. 190-199). The Pipeline and Hazardous Material Safety Administration (PHMSA), under the U.S. Department of Transportation (DOT) is responsible for regulating and ensuring the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines. The PHMSA's Office of Pipeline Safety (OPS) administers the DOT's national regulatory program to assure the safe transportation of natural gas, petroleum, and other hazardous materials by pipeline. The OPS develops regulations and other approaches to risk management to ensure safety in design, construction, testing, operation, maintenance, and spill response planning of pipeline facilities.

5.7.2.2 State

Seismic Hazards Mapping Act (Pub. Resources Code §§ 2690-2699.6). The California Department of Conservation, Division of Mines and Geology (now CGS) is directed to delineate Seismic Hazard Zones through the Seismic Hazards Zonation Program. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards, such as those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. In accordance with the Seismic Hazards Mapping Act, site-specific geotechnical investigations must be performed prior to permitting most urban development projects within seismic hazard zones.

Alquist-Priolo Earthquake Fault Zoning Act (Pub. Resources Code §§ 2621-2630). The Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist to identify earthquake fault zones along traces of both recently active and potentially active major faults. Cities and counties that contain such zones must inform the public regarding the location of these zones, which are usually one-quarter mile or less in width. The main purpose of the act is to prevent the construction of buildings on the surface fault rupture.

California Building Standards Code (Cal. Code Regs. tit. 24). The State of California provides minimum standards for building design and construction relating to fire and life safety, structural safety, and access compliance through the California Building Standards Code (CBSC), CCR, Title 24. CBSC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures and certain equipment. The code incorporates by adoption the 2012 IBC of the ICC. The 2022 edition of the California Building Standards Code (Title 24) became effective on January 1, 2023.

Among other provisions, the CSBC requires that a grading permit be issued by applicable local land use authorities if more than 50 cubic yards of soil are moved during the implementation of a project, and Chapter 16 (Structural Design) of the code describes seismic load calculation and design.

CalGEM Field Rules (Cal. Code Regs. tit. 14, § 1722(k)). The State Oil and Gas Supervisor may establish field rules for any oil and gas pool or zone in a field when sufficient geologic and engineering data are available from previous drilling operations. CalGEM has established field rules for those fields where geologic and engineering information is available to accurately describe subsurface conditions. These field rules identify downhole conditions and well construction information that oil and gas operators should consider when drilling and completing onshore oil and gas wells **(RR GEO-1)**.

5.7.2.3 Local

Solano County General Plan

- **Policy HS.I-20**: The County shall require geotechnical evaluation and recommendation before new development in moderate or higher-hazard areas. Such geotechnical evaluation shall analyze the potential hazards from landslides, liquefaction, expansive soils, steep slopes, erosion, subsidence, Alquist-Priolo Earthquake Fault Zones or other identified fault zones, tsunamis, and/or seiches. Require new development to incorporate project features that avoid or minimize the identified hazards.
- **Solano County Grading Permit:** The Engineering Division of the County's Public Works Department is responsible for issuing grading permits and will be required should the given project require excavations or fills greater than 50 cubic yards total movement on any site; 8,000 square feet of area disturbed; 3 feet in depth; or 2:1 slope. Exemptions include utility trenches, wells, and exploratory excavations **(RR GEO-2)**.

Sacramento County General Plan

Safety Element

- **Policy SA-1:** The County shall require geotechnical reports and impose the appropriate mitigation measures for new development located in seismic and geologically sensitive areas.

Sacramento County Code (Title 16 – Buildings and Construction)

- Sacramento County Grading Permit: The Site Improvement and Permits Section of the County's Engineering Division is responsible for issuing Grading and Erosion Control Permits and will be required for projects involving 350 cubic yards or more of earthwork (cut, fill, excavation, storage, or disposal) or 1 acre or greater of land clearing (clearing and grubbing). Exemptions include minor grading below these thresholds; however, when exempt from a grading permit, projects remain subject to applicable erosion and sediment control standards under County Code Chapter 16.44 **(RR GEO-2)**.

Contra Costa General Plan

Safety Element

- **Policy 10-20:** Any structures permitted in areas of high liquefaction danger shall be sited, designed, and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.

Contra Costa County Code (Title 8/Building Regulations)

- The County's Building Inspection Division issues Grading Permits and typically requires a permit for projects involving approximately 200 cubic yards or more of earthwork, fills exceeding 3 feet in depth or supporting structures, or when grading occurs on sites with sensitive conditions such as steep slopes, flood hazard areas, creek proximity, or significant impervious surface creation (generally 1,000 sq. ft. or more). Erosion and drainage controls are required as part of the County's stormwater compliance program, and projects disturbing 1 acre or more are subject to SWPPP requirements under the State NPDES Construction General Permit **(RR HYDRO-4)**.

5.7.3 Impact Analysis

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence

of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic ground shaking?

iii. Seismic-related ground failure, including liquefaction?

iv. Landslides?

(a) (i to iv) Less Than Significant Impact. Based on a review of available information and a review of seismic hazard maps, the proposed well sites within the Project area are not located within an Alquist-Priolo Earthquake zone. The nearest known fault (Clayton Fault) is approximately 19 miles away (CGS, 2025a). However, based on their proposed locations, portions of the Project site may be susceptible to seismic-related ground failure such as liquefaction, or landsliding.

CGS liquefaction hazard mapping identifies only the southernmost portion of the Project site on Bradford Island (south of the San Joaquin River) as within a liquefaction hazard zone (CGS, 2025). Portions of the Project area north of the San Joaquin River have not been evaluated by CGS for liquefaction, which indicates that the area was excluded from hazard zoning analyses (according to CGS due to mapping priorities or because CGS did not identify conditions warranting hazard delineation), and because any additional evaluation is typically addressed through local agency review and/or site-specific geotechnical studies. Site-specific subsurface investigations in the Project vicinity identified potentially liquefiable soils on both sides of the Sacramento River downstream of the City of Rio Vista, with estimated liquefaction-induced settlement on the order of a few inches during a design-level earthquake (Kleinfelder, 2020).

With respect to landslide hazards, as the Project area is predominantly low-relief Delta flatlands, no portion of the Project area is designated by CGS as a seismic landslide hazard zone (CGS, 2025). Portions of the Project area north of the San Joaquin River have not been evaluated by CGS for landslide hazards. Where CGS mapping is incomplete, regional landslide inventory data indicate that the only portion of the Project area identified as having any landslide susceptibility is the Montezuma Hills north of the Sacramento River, which is classified as an area of "few landslides" (ABAG, 2020).

Although potential hazards related to seismic settlement may exist in portions of the proposed Project area, the proposed gas wells would be located within the existing Rio Vista Gas Field. Gas wells operating in this area have been (or will be) designed with respect to any potential geologic hazards related to settlement in the event of a seismic event.

Additionally, in accordance with CEQA, Project analyses should address the potential impacts of the Project on the environment, not the potential impacts of the environment on the Project. As stated by the California Supreme Court, "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents."

During operations, the gas extraction wells, and associated facilities would require only routine inspections by existing Rio Vista Gas Field personnel. No structures intended for human occupancy would be constructed as part of the Project. Therefore, the risk of personnel exposure to substantial adverse effects from earthquakes or strong seismic ground shaking would be low.

Project activities would not exacerbate existing geological conditions or the potential for seismic-related ground failure or landslides. Therefore, impacts would be less than significant.

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

Less than Significant Impact. Although a large portion of the proposed well pads have been sited to utilize existing well pads or previously disturbed areas, Project construction would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance and approximately 25.4 acres of permanent conversion of land use. The estimated disturbance acreage is based on GIS analysis using shapefiles of the Project footprint supplied by CRPC. Soil erosion and loss of topsoil could occur due to surface disturbance activities including construction of access roads and well pads, pipeline installation, staging site construction, and drilling operations.

Based on the area required for disturbance, CRPC is required to obtain a State Water Resources Control Board NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (RR HYDRO-1) as well as a Major Grading Permit from Solano County, a Grading and Erosion Control Permit from Sacramento County, and a Grading Permit from Contra Costa County **(RR GEO-2)**. These requirements are intended to reduce soil erosion and the loss of topsoil. Based on these requirements, the following will occur prior to Project implementation:

- Prior to the initiation of any grading or construction, CRPC shall submit Permit Registration Documents (PRD) for the Construction General Permit Order (Order 2022-0057-DWQ) to the State Water Resources Control Board, and comply with, and implement, all requirements of the permit**.** The NPDES permit shall require implementation of Best Available Technology Economically Achievable (BAT) and BCT to reduce or eliminate pollutants in stormwater runoff. The NPDES permit shall also include any additional requirements necessary to achieve

applicable water quality standards. The Construction General Permit requires a site-specific Storm Water Pollution Prevention Plan (SWPPP) to be developed by the discharger. The SWPPP must list any BMPs that the discharger will use to protect storm water runoff and define the placement of identified BMPs. The SWPPP must be kept on-site, made available for review, and uploaded through the Stormwater Applications and Reports Tracking System (SMARTS)**(RR HYDRO-4)**.

- Prior to the initiation of grading or construction, CRPC shall obtain Grading and Erosion Control Permits issued by Solano, Sacramento, and Contra Costa counties. The recipient of a Grading and Erosion Control Permit shall be required to control erosion and sediment throughout the grading activities so as to prevent damage to public or private property and shall comply with all water quality control standards. The recipient shall also be required to control erosion so as to prevent the discharge of sediment or other pollutants and specifically to prevent any such discharge from entering any watercourse or water body **(RR GEO-2)**.

Adherence to conditions specified in these permit approvals, such as installing and maintaining erosion and sediment control BMPs identified in the SWPPP, stabilizing disturbed soil during and after grading, and performing required storm-related inspections and corrective actions, would minimize mobilization of disturbed soils and substantially reduce the potential for erosion and sediment discharge from construction areas. Additionally, following installation, well pads and access roads will be compacted and covered with gravel, pipeline corridors will be compacted, and vegetated areas would be restored in accordance with **MM BIO-14**. These measures would help reduce surface runoff and erosion. Therefore, there would be a less than significant impact to soil erosion.

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?

Less than Significant Impact. The Project site is generally level other than minor slopes present along the waterway banks. According to the NRCS Web Soil Survey, the Project area is primarily underlain by Diablo Ayar Clays (well-drained, 2 to 9 slopes, Solano County), Gazwell mucky clays (partially drained, 0 to 2 percent slopes, Sacramento County), and Rindge mucky silt loam (partially drained, 0 to 2 percent slopes, Contra Costa County). Naturally occurring subsidence due to peat compression occurs at the east side of the Project site on Brannan Island (Sacramento County) and the southeast on Bradford Island (Contra Costa County).

The Project does not involve the construction of slopes. As previously discussed, potential liquefaction and landslide hazards occur at two locations within the Project area, on Bradford Island in Contra Costa County and in the Montezuma Hills in Solano County; however, neither of these areas are designated by CGS as official liquefaction or landslide hazard zones, so hazard potential remains low (CGS, 2025). To address any remaining risk, gas wells and pipelines operating within the Rio Vista Gas Field will be designed and installed according to CalGEM's Field Rules for the Rio Vista Gas Field (2007) to account for the potential presence of unstable soils **(RR GEO-1)**. Therefore, impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property?

Less than Significant Impact. Although there is a potential for expansive soil within portions of the proposed Project areas, the Project has been designed to safely withstand expansive soil-related movement. Any fill areas will be compacted to 90 percent or better with the correct moisture and the use of compaction equipment such as a sheepsfoot compactor and or rubber tire wheel loaders. As previously mentioned, the Project does not include the construction of structures intended for human occupancy. The implementation of the proposed Project would not create a substantial direct or indirect risk to life or property. Therefore, Project impacts would be less than significant.

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

No Impact. The proposed Project would not involve the construction of any septic tank or other alternative wastewater disposal systems. Therefore, there would be no impact.

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

Less than Significant Impact. The proposed Project has been designed to utilize existing infrastructure and previously disturbed areas to the greatest extent feasible. However, Project construction would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance and approximately 25.4 acres of permanent conversion of land use. A large majority of this area is currently or has been historically utilized for agricultural

development, which has resulted in repeated disturbance to surficial soils present onsite.

However, a key structural element in the region is the Midland Fault Zone, which offsets Paleogene-aged formations, influencing hydrocarbon deposition and trapping (Graymer, 2002). The Project site produces from six stratigraphic zones of Paleogene age: Domengine Formation, Markley Sandstone, Nortonville Shale, Sidney Zone, Peterson Zone, and McCormick Sand. Although the surrounding region contains geological formations with known paleontological sensitivity, a review of available information, including the UCMP Berkeley Mapper database, indicates that the Project site is not specifically documented as containing paleontological resources.

Within the Project area, geomorphic processes such as fluvial erosion, sediment deposition, and land subsidence have altered the natural geologic setting. The construction of artificial levees has further modified sediment transport. According to the USGS Geologic Map of the Sacramento-San Joaquin Delta (Atwater, 1982), the Sacramento River Channel and its banks within the Project area primarily consist of Holocene-age dredge spoils (Qds), natural levee deposits (Ql), and bay mud deposits (Qpm), with the underlying Pleistocene-age Montezuma Formation (Qmz). The surficial Holocene deposits have low paleontological sensitivity due to their relatively recent formation, making the potential for encountering significant fossils low. Project-related surface disturbance (e.g., grading, trenching, and well pad construction) would be limited to shallow excavation within Holocene-age surficial deposits, including dredge spoils, natural levee deposits, and bay mud. While wells would be drilled to depths below Holocene deposits, these activities would occur through subsurface drilling rather than surface excavation and would not expose paleontological resources. Additionally, there are no other unique geologic features that would be disturbed by the proposed Project. As such, the Project would have a less than significant impact on paleontological resources or unique geologic features.

5.7.4 Mitigation Measures

The Project would not result in significant impacts on geology and soils; therefore, no mitigation is required.

5.8 GREENHOUSE GAS EMISSIONS

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

5.8.1 Environmental Setting

Greenhouse Gas Emissions (GHG), defined as any gas that absorbs infrared radiation in the atmosphere, include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorocarbons. These GHGs trap and build up heat in the atmosphere near the earth's surface, commonly known as the Greenhouse Effect. The atmosphere and the oceans are reaching their capacity to absorb CO_2 and other GHGs, leading to significant global climate change in the future. Unlike criteria pollutants and TACs, which are pollutants of regional and local concern, GHGs and climate change are a local, regional, and global issue. There is widespread international scientific consensus that human-caused increases in GHGs have and will continue to contribute to climate change, although there is uncertainty concerning the magnitude and rate of warming.

Climate change is having and will continue to have widespread impacts on California's environment, water supply, energy consumption, public health, and economy. Many impacts have already occurred, including increased fires, floods, severe storms, and heat waves (OPR, 2018). Documented effects of climate change in California include increased average, maximum, and minimum temperatures; decreased spring runoff to the Sacramento River; shrinking glaciers in the Sierra Nevada; sea-level rise at the Golden Gate Bridge and San Francisco Bay; warmer temperatures in Lake Tahoe, Mono Lake, and other major lakes; and plant and animal species found at changed elevations (OPR, 2018).

According to the Intergovernmental Panel on Climate Change (IPCC), the concentration of CO_2, the primary GHG, has increased from approximately 280 parts per million (ppm) in pre-industrial times (Fifth Assessment Report) to well over 410 ppm in 2021 (Sixth Assessment Report) (IPCC, 2014; IPCC, 2021). CO_2 concentrations as of 2019 are increasing about 1.9 ppm/year; present CO_2 concentrations are higher than any time in at least the last 2 million years. CO_2 is used as a reference gas for climate change. To account for different GHG global warming potentials for other gases, emissions are often quantified and reported as CO_2 equivalents (CO_2e). For example, if the CO_2 global warming potential is set at a reference value of 1, CH_4 has a warming potential of 27.9 (i.e., 1 ton of methane has the same warming potential as 27.9 tons of CO_2 [IPCC, 2021]), while nitrous oxide has a warming potential of 273.

5.8.2 Regulatory Setting

Federal, state, and local regulations, laws, policies, or other mandatory guidance from a lead or responsible agency pertaining to greenhouse gas emissions are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.8.2.1 Federal and State Regulations

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the Clean Air Act (CAA). The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the U.S. EPA has the authority to regulate emissions of GHGs. However, there were no federal regulations or policies regarding GHG emissions thresholds applicable to the proposed project at the time of this Initial Study.

The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California, and for implementing the CCAA. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long-term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Assembly Bill (AB) 32, California Global Warming Solutions Act (Health & Safety Code §§ 38500-38599). AB 32 requires a statewide GHG emissions reduction to 1990 levels by 2020. California exceeded the initial target of reducing

greenhouse gas emissions to 1990 levels by 2020 and reached that goal by 2016. AB 32 established regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and established a statewide GHG emissions cap. AB 32 authorized CARB to adopt market-based compliance mechanisms, such as the Cap-and-Trade system.

The initial main strategies and roadmap for meeting the 1990 emission level reductions were outlined in a Scoping Plan approved in December 2008 and updated every five years (the Scoping Plan was updated in 2014, 2017, and 2022). In 2016, the California Legislature passed SB 32, which established a 2030 GHG emissions reduction target of 40 percent below 1990 levels. In response to SB 32 and the companion legislation of AB 197, CARB approved the 2017 Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target (CARB, 2017). The 2017 Scoping Plan drew from the previous plans to present strategies to reaching California's 2030 GHG reduction target. The 2022 Scoping Plan for Achieving Carbon Neutrality lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The plan outlines how carbon neutrality can be achieved by taking bold steps to reduce GHGs to meet the anthropogenic emissions 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.

Cap-and-Trade Program (Cal. Code Regs. tit. 17, §§ 95801–96023). CARB approved the Cap-and-Trade Program (Cap-and-Trade) in late 2011. Cap-and-Trade sets a limit (cap) on the total emissions of GHG in the state, and this cap declines by approximately 5 percent per year through 2030. The program applies to emissions that cover approximately 80 percent of the state's GHG emissions. California oil and gas production operations that emit more than 25,000 metric tons of carbon dioxide equivalent ($MTCO_2E$) per year are required to be covered under Cap-and-Trade (covered entities). Covered entities are required to obtain GHG allowances[8] to cover their GHG emissions. GHG allowances are issued by CARB or can be purchased from CARB or other entities subject to Cap-and-Trade. A GHG allowance is a tradable permit to emit 1 $MTCO_2E$ of GHGs within the compliance year. These allowances are reduced each year, which requires the covered entity to reduce GHG emissions generated by their facility. In addition, covered entities can obtain GHG offset credits by implementing emissions reduction activities at other facilities. All entities covered in the Cap-and-Trade Program are still subject to existing air quality permit limits for criteria and toxic air pollutants.

Project Cap-and-Trade Compliance Obligation Emissions (Cal. Code Regs. tit. 17, § 95852). Project GHG emissions that would have a direct compliance

[8] Title 17, CCR, § 95812

obligation for the Project under the Cap-and-Trade program include emissions from the following:

- Well venting during well completions, workovers, well testing and well venting during liquids unloading; and
- Equipment leaks from valves, connectors, open-ended pipelines, pressure relief valves, pumps, flanges and other associated equipment leak sources.

GHG emissions from fuel combustion in Project equipment and other mobile sources during construction and/or operations would be included under the fuel suppliers' Cap-and-Trade Program compliance obligations (CARB, 2025) **(RR GHG-1)**. Therefore, these GHG emissions would not cause a covered entity's project GHG emissions to be significant under CEQA as they are already covered (SJVAPCD, 2014).

California Mandatory GHG Reporting Regulations (Cal. Code Regs. tit. 17, §§ 95100–95158). AB 32 sets the requirement for oil and gas sources to report their GHG emissions if their combustion or process emissions exceed 10,000 $MTCO_2E$ per year or if stationary combustion, process, fugitive, and vented emissions are 25,000 $MTCO_2E$ per year or greater.

Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (Cal. Code Regs. tit. 17, §§ 95665–95677). The Greenhouse Gas Emissions Standards for Crude Oil and Natural Gas Facilities (California Oil/Gas GHG Regulation) adopted by CARB in March 2017 and amended in June 2023, addresses fugitive and vented emissions from new and existing oil and gas facilities. Regulated entities are required to take actions to limit intentional (vented) and unintentional (leaked or fugitive) emissions from equipment and operations in the following sectors:

- Onshore and offshore crude oil or natural gas production.
- Crude oil, condensate and produced water separation and storage.
- Natural gas underground storage.
- Natural gas gathering and boosting stations.
- Natural gas processing plants; and
- Natural gas transmission compressor stations.

5.8.2.2 Local

Contra Costa General Plan

Chapter 4: Land Use Element

- **Policy LU P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to

meet state climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

Chapter 9: Health and Safety

- **Policy HS P1.7:** Encourage modernization projects at existing industrial facilities that support state energy and climate goals and achieve all of the following:
    a) Improved community and worker health and safety.
    b) Enhanced environmental protection.
    c) Significant reductions in criteria pollutants, TACs, and GHGs using Best Available Retrofit Control Technology when applicable.
    d) Timely remediation of preexisting and future on- and off-site contamination as a component of the project or through a fully funded work program that restores the site to a condition suitable for commercial or industrial use, or to a higher standard when determined necessary and feasible on a case-by-case basis.
- **Policy HS P3.1:** Prioritize implementation of the Contra Costa County Climate Action and Adaptation Plan to reduce GHG emissions from community-wide sources and adapt to changing climate conditions.

Contra Costa Climate Action and Adaptation Plan. The Climate Action and Adaptation Plan (CAAP) is Contra Costa County's comprehensive strategy to reduce GHG emissions in line with the state's goals across the unincorporated areas and to adapt to the effects of climate change. The plan outlines a range of programs and actions aimed at enhancing energy efficiency, promoting renewable energy, reducing vehicle miles traveled, expanding multimodal transportation options, increasing green infrastructure, minimizing waste, and improving the efficiency of government operations. In addition, the CAAP includes projections of future GHG emissions and establishes clear reduction targets and strategies to meet them (Contra Costa County, 2024b).

BAAQMD Significance Thresholds. The BAAQMD uses a fair share approach to determine whether a project's GHG emissions are cumulatively considerable. If a project contributes its fair share toward meeting the state's GHG reduction goals, the lead agency may conclude that the project is making an adequate contribution to addressing global climate change, and its impact would not be considered significant (BAAQMD, 2022).

Sacramento County General Plan, General Plan 2045

Air Quality Element

- **Policy AQ-4:** Developments[9] which meet or exceed thresholds of significance for ozone precursor pollutants, and/or GHG as adopted by the SMAQMD, shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan and/or a GHG Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

Land Use Element

- **Policy LU-115:** It is the goal of the County to reduce greenhouse gas emissions to 1990 levels by the year 2020. This shall be achieved through a mix of state and local action.

Sacramento Climate Action Plan. The County's Climate Action Plan (SAC-CAP), adopted by the Board of Supervisors in November 2024, outlines strategies to reduce GHG emissions while balancing environmental, economic, and community objectives. The CAP includes measures to meet California's 2020 and 2045 GHG reduction targets, with implementation actions focused on emissions from activities in the unincorporated County, including County operations (Sacramento County, 2024).

SMAQMD Significance Thresholds. SMAQMD has established a construction-related GHG emissions significance threshold of 1,100 $MTCO_2E$ per year, and an operational threshold of 10,000 $MTCO_2E$ per year for emissions from stationary sources. Therefore, a Project could have a significant impact on climate change if it would:

- Generates GHG emissions during construction that would exceed 1,100 $MTCO_2E$ per year or.
- Land development project generates GHG emissions during operations that would exceed 1,100 $MTCO_2E$ per year
- Stationary source generates GHG emissions during operations that would exceed 10,000 $MTCO_2E$ per year.

Solano County Climate Action Plan. The Climate Action Plan (SOL-CAP) was adopted by the Board of Supervisors in June 2011. The SOL-CAP's goals outline the reduction of GHG to reduce emissions by 20 percent below 2005 levels by 2020 (Solano County, 2011). Solano county has not provided an update to the SOL-CAP to cover the current state GHG reduction goals.

[9] This refers to the operational phase of the Project.

YSAQMD Significance Thresholds. The YSAQMD has not adopted thresholds of significance for GHG emissions. YSAQMD considers GHG impacts to be cumulative in nature and lead agencies should evaluate whether a project's incremental direct and indirect GHG emissions are cumulatively considerable (YSAQMD, 2025).

5.8.3 Impact Analysis

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

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

(a and b) Less than Significant Impact[10]. The primary sources of GHG emissions associated with the construction of 83 natural gas wells over 6.8 years would result from the use of internal combustion engines during temporary construction and drilling activities. Specifically, construction equipment such as backhoes, excavators, cranes, forklifts, generators, loaders, pumps, water trucks, and drill rigs would be utilized (refer to Section 2.4). During the operational phase, GHG emissions would primarily result from the operation of twelve air compressors used to boost the produced natural gas. Additional GHG emissions from both the construction and operational phases would come from on-road motor vehicles used to transport materials and personnel.

GHG emissions resulting from Project construction and operational activities were estimated using established emission factors from the California Air Resources Board's (CARB) CalEEMod, as presented in the CalEEMod User's Guide Appendix D, Default Data Tables (Trinity, 2021), and the CalEEMod 2022 User Guide Appendix G (CARB, 2022). Emissions associated with worker commutes and truck traffic to and from the Project area were estimated using emission factors from CARB's 2021 EMFAC2021 (CARB, 2025a). GHG emissions from oil well and pipeline components were calculated using emission factors obtained from the U.S. EPA Protocol for Equipment Leak Emission Estimates (U.S. EPA, 1995). A tabulation of assumptions, references, and calculations for the Project emission estimates are provided in Appendix C. Tables 5.8-1 and 5.8-2[11]

[10] The methods outlined in CEQA Guidelines §15064.4 were used to conclude the level of significance.

[11] Additional construction mobile source emissions occurring outside the Project area were calculated for the SMAQMD, the FRAQMD, and the SJVAPCD. These emissions are separate from those summarized in Tables 5.8-1 and do not overlap with the emissions already accounted for. None of the estimated emissions in these districts exceeded the respective air district significance thresholds. A detailed summary of these emissions is provided in Appendix C.

below list the maximum estimated Project GHG emissions calculated for the Project activities during construction and operational activities using the current Project schedule and equipment.

Table 5.8-1. Estimated Construction Related Greenhouse Gas Emissions

AQMD/Work Year	Units	N_2O	CH_4	CO_2	$MTCO_2E/yr$
BAAQMD Emissions Year 1	tons/year	0.071	0.532	9,317	8,483
BAAQMD Emissions Total	**tons**	**0.071**	**0.532**	**9,317**	**8,483**
SMAQMD Emissions Year 1	tons/year	0.081	0.512	9,315	8,483
SMAQMD Emissions Year 2	tons/year	0.132	0.795	15,342	13,971
SMAQMD Emissions Year 3	tons/year	0.005	0.089	317	291
SMAQMD Emissions Total	**tons**	**0.218**	**1.40**	**24,974**	**22,745**
YSAQMD Emissions Year 1	tons/year	0.078	0.549	10,015	9,118
YSAQMD Emissions Year 2	tons/year	0.078	0.552	10,039	9,141
YSAQMD Emissions Year 3	tons/year	0.079	0.587	10,143	9,236
YSAQMD Emissions Total	**tons**	**0.235**	**1.69**	**30,197**	**27,495**

Table 5.8-2. Estimated Operation Related Greenhouse Gas Emissions

AQMD	Units	N_2O	CH_4	CO_2	$MTCO_2E/yr$
BAAQMD Emissions Total	tons/year	0.010	8.85	5,549	5,237
SMAQMD Emissions Total	tons/year	0.016	24.5	8326	8,114
YSAQMD Emissions Total	tons/year	0.037	10.07	19,418	17,854

Construction GHG Emissions

The Project's construction phase GHG emissions within the BAAQMD were estimated at 8,483 $MTCO_2E$ in Construction Year 1. The BAAQMD does not have

a GHG significance threshold to determine whether a project's GHG emissions are cumulatively considerable. Per the BAAQMD if a project contributes its fair share toward meeting the state's GHG reduction goals, the project's impact would not be considered significant.

The Project's construction-phase GHG emissions within the SMAQMD were estimated at 8,483 $MTCO_2E$ in Construction Year 1, 13,971 $MTCO_2E$ in Construction Year 2, and 291 $MTCO_2E$ in Construction Year 3. These estimates indicate that the SMAQMD GHG significance threshold of 1,100 $MTCO_2E$ per year would be exceeded in Construction Years 1 and 2.

The Project's construction-phase GHG emissions within the YSAQMD were estimated at 9,141 $MTCO_2E$ in Construction Year 1, 9,141 $MTCO_2E$ in Construction Year 2, and 9,236 $MTCO_2E$ in Construction Year 3. The YSAQMD does not have a GHG significance threshold to determine whether a project's GHG emissions are cumulatively considerable.

The GHG emissions resulting from construction activities would primarily result from the combustion of diesel fuel used to operate the construction equipment, drilling rig, generators and mobile sources, which are covered by Cap-and-Trade regulations in connection with fuel suppliers (CARB, 2025d). Additional GHG emissions would be generated during construction activities from potential vented and fugitive losses during drilling and well completion activities[12] . These emissions would be covered under CRPC's Cap-and-Trade obligations **(RR GHG-1)**. These emissions would be temporary and, as a result, would not have a significant cumulative effect.

Operational GHG Emissions

Project operational GHG emissions within the BAAQMD were estimated at 5,237 $MTCO_2E$ per year, which is below BAAQMD's significance threshold of 10,000 $MTCO_2E$/year. Within the SMAQMD, operational emissions were estimated at 8,114 $MTCO_2E$/year, which is below the SMAQMD's 10,000 $MTCO_2E$/year threshold. In the YSAQMD, operational GHG emissions were estimated at 17,854 $MTCO_2E$/year. The YSAQMD does not have a GHG significance threshold to determine whether a project's GHG emissions are cumulatively considerable.

GHG emissions from operational activities would be primarily result from the combustion of field gas used to operate the twelve compressor units, which are covered under CRPC's Cap-and-Trade obligations **(RR GHG-1)**. Additional GHG emissions would result from potential fugitive emissions from wellhead and

[12] These emissions cannot be accurately estimated therefore are not included in emissions estimates.

pipeline components[13], these emissions would be covered under CRPC's Cap-and-Trade obligations.

In summary, GHG emissions resulting from the Project's construction and operational phase would be covered under the Cap-and-Trade program, which is a CARB approved GHG mitigation plan. The Cap-and-Trade program would enforce a reduction in GHG emissions generated by the Project's operational activities over time by requiring the surrender of CRPC's GHG allowances and/or offset credits. Fuel and electricity suppliers that supply the Project would also be required to reduce their GHG emissions over time. Therefore, GHG emissions would not be expected to be significant, and the project would not be expected to make a substantial contribution to the cumulatively significant impact of global climate change. A less-than-significant impact would result, and no mitigation would be required.

5.8.4 Mitigation Measures

The Project would not result in significant impacts from GHG emissions; therefore, no mitigation is required.

[13] These emissions cannot be accurately estimated therefore are not included in emissions estimates

5.9 HAZARDS AND HAZARDOUS MATERIALS

HAZARDS AND HAZARDOUS MATERIALS – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for	☐	☐	☐	☒

HAZARDS AND HAZARDOUS MATERIALS – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
people residing or working in the project area?				
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐

5.9.1 Environmental Setting

5.9.1.1 Regional Setting

The Project area is located in the existing Rio Vista Gas Field that spans Solano, Sacramento, and Contra Costa counties and is situated within the Sacramento-San Joaquin River Delta region. Much of the Rio Vista Gas Field is developed with gas wells and associated infrastructure or agricultural development.

Access to the Solano and Sacramento County portions of the Project area is primarily provided by State Route 12 (SR-12), a two-lane paved highway classified as a rural minor arterial by Solano County (Solano Transportation Authority, 2018). SR-12 connects to Church Road and Airport Road, which provide access to well pads and associated infrastructure within the Project site. Additional access is available via Brannan Island Road, which connects to Brannan Island State Recreation Area and extends to private levee roads providing access to oil and gas facilities on Brannan, Twitchell, and Andrus Islands. Access to the Contra Costa portion of the Project area which is located on Bradford Island is limited to private ferry service that operates from the Jersey Island Ferry Terminal (Contra Costa County GIS Data, 2025). CRPC currently utilizes this ferry service year-round to conduct well site inspections on Bradford Island, and no seasonal or private-use restrictions are anticipated.

The nearest evacuation route is SR-12, which runs through the northern portion of the Project area in both Solano and Sacramento counties (Sacramento County, 2025c; Solano County, 2008). The construction activities associated with the Project would increase vehicles and equipment on roads adjacent to the Project site, including SR-12 as further discussed in Section 5.17, Transportation below.

According to the Airport Data and Information Portal, the closest private airport is Walnut Grove Airport which is located approximately 7.5 miles northeast of well pad SAC-BR-1 in the Sacramento County portion of the Project area. The nearest public airport is the Rio Vista Municipal Airport which is located approximately 2.1 miles northeast of well pad SOL-1 within the Solano County portion of the Project area.

The nearest school to the Project area is Rio Vista High School, located in the City of Rio Vista, approximately 1.25 miles northeast of the Project area within Solano County based on aerial imagery and geospatial measurements.

5.9.1.2 Project Setting

The Project site consists primarily of agricultural fields and some areas of wetlands, along with existing well pads and associated gas infrastructure. Land use in the Project area and surrounding vicinity currently includes agricultural, open space, residential, and industrial uses. The nearest residential area is approximately 0.70 miles from the Solano County portion of the Project site in the City of Rio Vista based on aerial imagery and geospatial measurements. The SWRCB GeoTracker database identifies five cleanup sites within an approximate 0.5-mile vicinity of the Project area in Solano County (DTSC, 2025). All five cleanup sites have case-closed status and are associated with PG&E facilities (PG&E Serpa Junction [SL0609588625], PG&E Rio Vista L-182 Dehydrator Station [SL186012959], PG&E Compressor K-1 [SL0611334392], PG&E Compressor K-1 [SL0609555516], and PG&E Perry Anderson Former dehydrator Station [T10000000596]).

The SWRCB GeoTracker database also identified two cleanup sites within an approximate 0.5-mile vicinity of the Project area in Sacramento County (DTSC, 2025). Both cleanup sites have case-closed status and are associated with PG&E facilities on Brannan Island (PG&E Pipeline #195 Leak, SL0606730275) and Twitchell Island (PG&E Compressor K-17, SL0606731116).

No cleanup sites were identified by GeoTracker within 0.5-mile of the Project area within Contra Costa County (SWRCB, 2025).

The DTSC EnviroStor databases (commonly referred to as the "Cortese List" Gov Code §65962.5) did not identify any active sites within the boundaries of the Project area (DTSC, 2025).

Drilling activities are anticipated to utilize an Ensign ADR300/350 (or equivalent) drill rig. Drilling activities would take approximately 15 days per well, with 4 days of that time associated with drilling. Drilling would be conducted on a continuous basis (24 hours per day) until the required depth is achieved.

An example gas well drilling procedure for the Project includes the following steps:

Conductor Installation:

- **Install well cellar**. Drill rathole and mousehole for drilling rig. Drill 24-inch hole with bucket drill bit to 80 feet below ground level.
- **Set Conductor**. Set 16-inch conductor pipe on bottom and cement to surface.
- **Inspection.** Inspect site in preparation for drilling.

Drilling Procedure:

- **Mobilize Drill Rig**. Mobilize in and rig up drill rig.
- **Install Blowout Prevention Equipment (BOPE)**. Install annular preventer and 6-inch diverter line for BOPE while drilling the surface hole section.
- **Drilling**. Directionally drill the 12.25-inch surface hole to 1,000 feet.
- **Cementing**. Run 9.625-inch casing and cement well to surface casing.
- **Install Wellhead.** Install wellhead on well.
- **BOPE Test.** Rig up BOPE and test per CalGEM guidelines. CalGEM to witness.
- **Drill 8.75-inch Section**. Mobilize 8.75-inch bottom hole assembly and drill vertically to ~6,873 feet total depth (TD).
- **Cement**. Run 5.5-inch casing and cement well to surface production casing.
- **Pressure Testing and Instrumentation.** Remove BOPE and install production tree.
- Rig Down and Demobilize (Move Out) – RDMO/Well is Ready for Production. RDMO and place well on production.

Drilling waste generated during Project activities is anticipated to be non-hazardous. This is based on the types of materials that would be generated during drilling operations, including native soils, drilling cuttings, and drilling fluids that are typically composed of water-based mud systems without hazardous additives. Final waste classification would be determined in accordance with applicable hazardous waste regulations administered by the California DTSC. If necessary, representative samples of drilling waste would be collected and analyzed using standard analytical methods (e.g., TTLC and STLC) to determine whether the waste exhibits hazardous characteristics under Title 22 of the CCR. If analytical testing indicates that any drilling waste exceeds applicable hazardous waste thresholds, the material would be characterized as hazardous waste and managed, transported, and disposed of in accordance with all applicable federal, state, and local regulations.

The anticipated drilling fluids would be an LSND system, with a mud weight of 8.6-9.0 pounds per gallon (ppg) for the 12.25-inch section and a weight of 9.5-10.0 ppg for the 8.75-inch section. The Project includes 83 wells, and it is anticipated that approximately 1,600 Bbl of drill cuttings will be generated per well, for a Project total of 132,800 Bbl. All drilling waste, including drill cuttings, will be collected in roll-off bins approved for transport and stored within secondary containment while awaiting disposal. This process will occur on a continuous basis (i.e., daily). All waste will be properly manifested and delivered to an approved waste handling facility. Representative analytical samples will be collected and analyzed for each waste stream, and the resulting data will be used to accurately characterize and profile the waste for proper disposal. Solid drilling waste would be transported in covered bins to a regional landfill, such as Potrero Hills Landfill (contact phone number: 704-432-4627) in Solano County, approximately 30 miles from the Project area, and/or Sacramento County (Kiefer) Landfill (contact phone number: 916-875-5555), approximately 50 miles from the Project area. These selected landfills have previously accepted similar waste from other CRPC facilities based on analytical data and waste profiling. CRPC also relies on third-party reports to verify that disposal facilities remain in good standing and are compliant with all applicable local, state, and federal regulations.

Transportation will be performed by Patriot Environmental or Ancon. The typical haul truck can carry 100 Bbl of drilling waste and with approximately 1,600 Bbl of waste anticipated to be generated from each well, approximately 16 trips per well will be required to transport drilling waste to the offsite disposal site. Drilling will take place over the course of approximately 2 weeks for each well; therefore, the 16 truck trips would be spread out over this time period and would have a less than significant impact on traffic.

Following completion of the wells, associated production equipment will be installed onsite within the designated well pads, new pipelines will be installed, and the Project would be tied into the existing gas distribution system. Pipeline remediation within the existing system in up to three locations may be required to accommodate the new gas production. Remediation would include the replacement of up to three existing pipelines if they do not meet the minimum high-pressure rating when tested. The existing pipelines would be abandoned in place (i.e., filled with water, capped, and left in place) and the new replacement pipelines would then be trenched in and installed along the existing pipeline corridor, using the same methods for new pipeline installation (refer to Section 2.4.4 for pipeline installation details). Remediation would not create any additional temporary hazards outside of those already associated with new pipeline installation and tie-in. Operational activities would involve periodic inspections by existing CRPC personnel that service the Rio Vista Gas Field. Well maintenance (workovers) will be conducted as necessary, typically

at a rate of approximately two to three times over the operational life of the well (approximately 30 years).

During well operation, condensate byproduct will be taken from the Project site by vacuum truck (approximate carrying capacity is 120 Bbl of produced fluid) approximately once per month. The byproduct water will be diverted by the free water knockout trap and accommodated within the proposed piping system. No additional storage tanks would be required. All equipment will be placed within the boundaries of the graded well pad areas. Condensate would be characterized in accordance with applicable California regulations (Title 22 CCR) to determine whether it qualifies as a hazardous waste or an exempt oil and gas waste. Depending on this determination, the material will be transported by licensed haulers in compliance with state and federal requirements. The condensate byproduct fluid would be taken to the Midland Fee facility for water and condensate separation. The separated condensate would be sold as hydrocarbon at the Midland Fee facility and the water would be disposed of in one of the three existing Class II disposal wells managed by CRPC within the Rio Vista Gas Field.

5.9.1.3 Best Management Practices (BMPs)

BMPs during construction and operation of the proposed wells will include (but not be limited to) the following:

Construction:

- CRPC Worker Safety and Environmental Awareness Project Training prior to and throughout Project activities **(DF HAZ-1)**.
- Drilling practices that are compliant with the CalGEM requirements for assuring safe drilling and drill casing practices, well design, construction and well management requirements, blowout requirements, and all other provisions of 14 CFR 1744 and other applicable CalGEM regulations. CRPC also reduces the incidence of well control losses by following the practices described in Recommended Practice for Well Control Operations (API, 2012).
    - Use of a closed-loop system to avoid discharges of drilling muds and fluids; and
    - Ensuring construction waste is not stored onsite for longer than the duration of the construction activity or transportation of any waste to unpermitted facilities. CRPC will also reduce construction waste transported to landfills to the extent feasible by recycling solid waste construction materials. CRPC would have access to records of disposal receipts or trucking manifests from third party disposal and recycling services.

Operations:

- Conduct a Process Hazard Analysis (PHA) as part of the CRPC Risk Program to identify safety, operability, and environmental hazards associated with operation of facilities. The analyses include the evaluation of prevention and mitigation measures currently practiced by CRPC with respect to minimizing the identified risks and/or hazards.
- Testing, Maintenance and Inspections. Breakout and storage tanks, pipelines, secondary containment structures, and transfer equipment such as pumps and valves are inspected, tested, and maintained in accordance with the applicable regulatory requirements, industry standards, or CRPC internal policies.
- Spill prevention measures at CRPC facilities include inspection and testing procedures, primary and secondary physical containment, 24-hour per day electronic monitoring, and in-person patrols, all designed to ensure appropriate mechanical conditions and operations of the facility infrastructure. Constant monitoring with telemetry allows for immediate camera viewing and live pressure and condensate tank monitoring to reduce risk of overflow into secondary containment. Leak detection alarms send immediate remote notifications to CRPC personnel for response and data would be retained electronically by CRPC and provided to CalGEM or other agencies upon request.
- Access. CRPC restricts access to authorized personnel only at all its facilities.
- Emergency Response. CRPC maintains a Consolidated Emergency Response/Contingency Plan in accordance with the California Environmental Reporting System (CERS) for handling of hazardous materials in support of gas production. The Emergency Response Plan includes a summary of emergency notifications and procedures, including emergency coordinator (and alternate) contact information and training for all CRPC personnel and contractors on an annual basis. Emergency containment and cleanup procedures are outlined for containing spills and preventing and mitigating releases. Emergency equipment available onsite and instructions for use, as well as required training, are specified. Training for the Emergency Response Plan would be annual, and records of annual refresher training would be retained electronically by CRPC and provided to CalGEM or other applicable agencies upon request.

5.9.2 Regulatory Setting

State and local regulations, laws, rules, policies, or other mandatory guidance from a lead or responsible agency pertaining to hazards and hazardous

materials are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.9.2.1 Federal

National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300). The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) was first developed in 1968. The NCP is administered by the U.S. EPA. Its purpose is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

It applies to oil discharges into or on navigable waters of the United States as well as hazardous substances releases into the environment that may present an imminent or substantial danger to public health or welfare of the United States. It specifies responsibilities among the federal, state, and local governments and requires the establishment for federal, regional, and area contingency plans. It summarizes state and local emergency planning requirements under the Superfund Amendments and Reauthorization Act (SARA). It also provides the procedures for undertaking removal actions pursuant to Section 311 of the CWA and response actions pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is discussed below.

Resource Conservation and Recovery Act (40 C.F.R. § 240-299). The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act (RCRA) of 1976 established a program administered by the U.S. EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the HSWA, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. Hazardous waste is regulated under the RCRA subtitle C. The RCRA established the system for controlling hazardous waste from its point of origin to its final disposal, specifically the handling, storage and disposal requirements. A RCRA hazardous waste is a waste that appears on one of the four hazardous wastes lists (F-list, K-list, P-list, or U-list), or exhibits at least one of four characteristics - ignitability, corrosivity, reactivity, or toxicity. The Hazardous Waste Manifest System includes a set of forms, reports, and procedures designed to seamlessly track hazardous waste from the time it leaves the generator facility where it was produced, until it reaches the offsite waste management facility that will store, treat, or dispose of the hazardous waste. Operating records, for example, must be kept on site for the duration of the facility's operation. Recordkeeping and reporting requirements are found at 40 CFR Part 264 subpart E and 40 CFR Part 265 Subpart E.

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (CERCLA) as amended by

the Superfund Amendments and Reauthorization Act (SARA) (42 U.S.C. §§ 9601–9675). CERCLA, commonly known as Superfund, was enacted by Congress on December 11, 1980. This law (U.S.C. Title 42, Chapter 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at these sites and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also enables the revision of the NCP. The NCP (40 CFR, Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the NPL. CERCLA was amended by the SARA on October 17, 1986.

Emergency Planning and Community Right-to-Know Act (42 U.S.C. §§ 11001–11050). Under the Emergency Planning and Community Right-to-Know Act, or Title III of the SARA, the U.S. EPA requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments or public health departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste on-site and the location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

In 1990, Congress passed the Pollution Prevention Act which requires facilities to report additional data on waste management and source reduction activities to the U.S. EPA under the Toxics Release Inventory Program. The goal of the Toxics Release Inventory is to provide communities with information about toxic chemical releases and waste management activities and to support informed decision making at all levels by industry, government, non-governmental organizations, and the public.

Clean Water Act (CWA) (33 U.S.C. §§ 1251 et seq.) and Spill, Prevention, Control, and Countermeasure (SPCC) Rule (40 C.F.R. pt. 112). The CWA, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. As part of the CWA, the U.S. EPA oversees and enforces the Oil Pollution Prevention regulation contained in Title 40 of the CFR, Part 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement SPCC plans. A facility is subject to SPCC regulations if a

single oil storage tank has a capacity greater than 660 gallons, or the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States. The proposed Project does not include the construction or use of oil storage tanks, therefore the SPCC Rule does not apply.

Other federal regulations overseen by the U.S. EPA relevant to hazardous materials and environmental contamination include Title 40 CFR Chapter 1, Subchapter D – Water Programs and Subchapter I – Solid Wastes. Title 40 CFR Chapter 1, Subchapter D, Parts 116 and 117 designate hazardous substances under the CWA. Title 40 CFR Part 116 sets forth a determination of the reportable quantity for each substance that is designated as hazardous. Title 40 CFR Part 117 applies to quantities of designated substances equal to or greater than the reportable quantities that may be discharged into waters of the United States.

The Safe Drinking Water Act (SDWA) (42 U.S.C. § 300 (h) et seq.). The SDWA regulates the amount of toxic substances in drinking water sources. The SDWA requires the U.S. EPA to develop minimum federal requirements for UIC programs and other safeguards to protect public health by preventing injection wells from contaminating underground sources of drinking water. The U.S. EPA developed the UIC Program requirements, but states, territories, and tribes can obtain primary enforcement responsibility, or primacy. State regulations must be as stringent as federal requirements but may be more stringent. The U.S. EPA has delegated responsibility to CalGEM for implementing UIC Program requirements for Class II wells in California.

Clean Air Act Amendments (§ 112(r); 42 U.S.C. § 7412(r); 40 C.F.R. pt. 68). The U.S. EPA requires facilities that handle listed regulated substances to develop Risk Management Plans (RMP) to prevent accidental releases of these substances. RMP materials are submitted to both local agencies (generally the fire department) and the U.S. EPA. Stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for, and impacts of, accidental releases of that substance. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit an RMP. RMPs consist of three main elements: a hazard assessment that includes an off-site consequence analysis and a five-year accident history; a prevention program; and an emergency response program.

Exploration and Production Exemption from the Resource Conservation and Recovery Act (RCRA)(40 C.F.R. § 261.4(b)(5)). While RCRA was enacted to regulate hazardous waste from industrial, commercial, mining, agricultural, and community activities, certain hazardous wastes which are exempted from the Subtitle C regulations are regulated under RCRA Subtitle D. Congress exempted

"drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas or geothermal energy" from regulation under RCRA Subtitle C as hazardous wastes.

The exempted oil and gas wastes are unique because they are generated in large quantities but are relatively low in toxicity. Produced water makes up about 98 percent of all oil and gas waste. The exemption only applies to waste generated from the exploration, development, and production of oil and gas associated with primary field operations. Primary field operations include primary, secondary, and tertiary production of oil or gas.

Hazard Communication (29 C.F.R. § 1910.1200). The purpose of this section is to ensure that the hazards of all chemicals produced or imported are classified and that information concerning the classified hazards is transmitted to employers and employees. The requirements of this section are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3. The transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, safety data sheets and employee training.

5.9.2.2 State

Hazardous Waste Control Act (Health & Saf. Code, § 25100 et seq.). The Hazardous Waste Control Act established the state hazardous waste management program, which is similar to, but more stringent than RCRA program requirements. The Hazardous Waste Control Law regulates the management of hazardous waste under Health and Safety Code, Division 20 Chapter 6.5. This law defines hazardous wastes and the procedures for the handling, transportation, and disposal of hazardous waste. The implementing regulations prescribe management practices for hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. Hazardous waste is tracked from the point of generation to the point of disposal or treatment using hazardous waste manifests. The manifests list a description of the waste, its intended destination, and regulatory information about the waste. The hazardous waste control program is administered by the state DTSC and by local Certified Unified Program Agencies (CUPAs).

The Porter-Cologne Water Quality Control Act, California Water Code Sections 13300-13999 and Title 23 of the California Administrative Code. This Act is analogous to the federal CWA and regulates discharges that may affect the quality of the state's waters. Unlike the federal CWA, which defines "waters of the United States" to exclude groundwater, "waters of the state" as defined under the Porter-Cologne Act include groundwater. The SWRCB and the nine

RWQCBs are responsible for planning, permitting, and enforcement. The State Board formulates policies for water-quality control and implements the required permit system.

The Porter-Cologne Act gives the CVRWQCB the authority to regulate discharges of waste to land in these counties. The CVRWQCB has established waste classifications, site classifications, and WDRs. The CVRWQCB implements the regulations through issuance of WDRs and general orders for the waste management unit. Waste management units, permitted by the CVRWQCB include evaporation ponds, percolation ponds, and sumps. As discussed in Section 5.10 (Hydrology and Water Quality), drilling muds and boring wastes associated with oil and gas development are currently regulated under SWRCB General Order 2003-0003-DWQ which addresses low-threat discharges to land.

Hazardous Materials Business Plans (HMBP) (Health & Saf. Code § 25504(a)–(c); 22 Cal. Code Regs. § 66265.16). This requires an owner or operator to complete and submit a HMBP if the facility handles a hazardous material or mixture containing a hazardous material that has a quantity at any one time during the reporting year equal to or greater than 55 gallons of liquid, 500 pounds of a solid, 200 cubic feet at standard temperature and pressure of a compressed gas, any quantity of hazardous waste and amounts of radioactive materials requiring an emergency plan pursuant to Parts 30, 40, or 70 of Title 10 CCR. These regulations are designed, in part, to ensure that hazardous materials and oil and petroleum products are properly managed and contained to minimize the potential for a release to the environment, thereby limiting the potential for related exposure to the environment, workers, and the public.

Pipeline Management Plans (Cal. Code Regulations, tit. 14, § 1774.2). A Project operator is required to prepare, maintain, and periodically update a Pipeline Management Plan for all regulated pipelines. The plan must include pipeline inventory information, testing and inspection schedules, preventive maintenance procedures, pipeline mapping, and product transportation information to ensure the safe operation and integrity of pipeline systems. The plan shall be updated when pipelines are installed, modified, or acquired **(RR HAZ-1)**.

Spill Contingency Plan (Cal. Code Regulations, tit. 14, § 1722). a Project operator shall prepare, maintain, and implement a Spill Contingency Plan (SCP) consistent with requirements applicable to oil and gas operations regulated by the California Geologic Energy Management Division (CalGEM). The SCP shall address emergency notification procedures, spill containment and cleanup measures, emergency equipment availability, facility evacuation procedures as applicable, and personnel training for response to unauthorized releases. The SCP shall be implemented during all phases of project construction and operation **(RR HAZ-2)**.

5.9.2.3 Local

Solano County General Plan

Public Health and Safety Chapter

- **Policy HS.P-49:** Minimize the risks associated with transporting, storing, and using hazardous materials through methods that include careful land use planning and coordination with appropriate federal, state, or County agencies.
- **Policy HS.P-52:** Promote hazardous waste management strategies in this order of priority: source reduction, recycling and reuse, on-site treatment, off-site treatment, and residuals disposal.

Sacramento County General Plan

Hazardous Materials Element

- **Policy HM-4:** The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards.
- **Policy HM-8:** Continue the effort to prevent ground water and soil contamination.
- **Policy HM-9:** Continue the effort to prevent surface water contamination.
- **Policy HM-10:** Reduce the occurrences of hazardous material accidents and the subsequent need for incident response by developing and implementing effective prevention strategies.
- **Policy HM-11:** Protect residents and sensitive facilities from incidents which may occur during the transport of hazardous materials in the County.

Contra Costa County General Plan

Safety Element

- **Policy HS-P9.3:** Require new industrial development to reduce generation and disposal of hazardous materials to the maximum extent feasible by (listed in order of importance):
  a) Implementing operational source reduction strategies and replacing hazardous materials with less hazardous materials.
  b) Reducing generation of those wastes not amenable to source reduction or recycling.
  c) Recovering and recycling the remaining waste for reuse.

d) Properly disposing of hazardous wastes and residuals generated from treatment of hazardous waste.

- **Policy HS-P9.5:** Require industrial projects involving use, management, or generation of hazardous materials or waste, particularly those utilizing stationary or fixed storage tanks, in areas at risk from sea level rise, surface or emergent groundwater flooding, or tsunami to incorporate best management practices to reduce risk and prepare plans for prevention and remediation of hazardous materials/waste releases resulting from inundation. Remediation plans must meet regulatory standards for protection of people and the environment in the event of permanent inundation and include financial assurances to guarantee implementation.
- **Policy HS-P9.6:** Require transport of hazardous materials via the safest available method for each material, avoiding Impacted Communities, populated areas, and areas subject to natural hazards whenever possible.
- **Policy HS-P9.8:** Require applicants for projects that involve hazardous materials or hazardous waste to provide clear information in plain language about potential hazards their projects pose to nearby communities at the beginning of the review process. Review and verify this information, make it available to residents, and encourage project applicants to host at least one community meeting to discuss potential hazards.
- **Policy 10-62:** Storage of hazardous materials and wastes shall be strictly regulated.
- **Policy 10-64:** Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.
- **Policy 10-68:** When an emergency occurs in the transportation of hazardous materials, the County Office of Emergency Services shall be notified as soon as possible.
- **Policy 10-69:** Industry should be encouraged to utilize underground pipelines, rail, and water transportation of hazardous materials to the greatest extent feasible to take advantage of the greater separation from the general public provided by these modes of transportation.

5.9.3 Impact Analysis

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. Construction activities would require the routine storage, transport, use, and disposal of small quantities of hazardous materials for construction equipment. These materials may include gasoline, diesel, hydraulic fluids, lubricants, coolants, and solvents. Improper transport, use, or disposal of these materials could result in a potentially significant impact to the public or the environment. However, CRPC includes the standard practice of implementation of a Worker Safety and Environmental Awareness Project Training prior to and throughout Project activities in order to reduce the potential for release **(DF HAZ-1)**. Additionally, implementation of **RR HAZ-2,** Adherence to Facility and Consolidated Emergency Response/Contingency Plan, would reduce impacts to less than significant by ensuring the correct storage and handling of materials and response in the event of an unauthorized release.

Drilling activities would be conducted in accordance with CalGEM requirements. Drilling activities are anticipated to use an Ensign ADR300/350 (or equivalent) drill rig. Drilling activities would take approximately 15 days per well, with 4 days of that time associated with drilling. Drilling would be conducted on a continuous basis (24 hours per day) until the required depth is achieved. The anticipated drilling fluids would be an LSND system, with a mud weight of 8.6 to 9.0 pounds per gallon (ppg) for the 12.25-inch section and a weight of 9.5 to 10.0 ppg for the 8.75-inch section. Drilling waste generated by the Project is anticipated to be non-hazardous. This is based on the types of materials that would be generated during drilling operations, including native soils, drilling cuttings, and drilling fluids that are typically composed of water-based mud systems without hazardous additives. Final waste classification would be determined in accordance with applicable hazardous waste regulations administered by the California DTSC. If necessary, representative samples of drilling waste would be collected and analyzed using standard analytical methods (e.g., TTLC and STLC) to determine whether the waste exhibits hazardous characteristics under Title 22 of the CCR. If analytical testing indicates that any drilling waste exceeds applicable hazardous waste thresholds, the material would be characterized as hazardous waste and managed, transported, and disposed of in accordance with all applicable federal, state, and local regulations.

It is anticipated that approximately 1,600 Bbl of drill cuttings will be generated per well (for a Project total of 132,800 Bbl). In accordance with the Recommended Practice for Well Control Operations, all drilling waste, including drill cuttings, will be managed within a closed-loop system and stored in tanks before the waste is hauled away for disposal. The non-hazardous drilling waste will not be stored onsite for longer than the duration of construction activities. Storage and collection of drilling waste would comply with all RCRA waste storage and collection requirements. Solid drilling waste would be transported in

covered bins to a regional landfill, such as Potrero Hills Landfill in Solano County, approximately 30 miles from the Project area, and/or Sacramento County (Kiefer) Landfill, approximately 50 miles from the Project area. These selected landfills have previously accepted similar waste from other CRPC facilities based on analytical data and waste profiling. CRPC also relies on third-party reports to verify that disposal facilities remain in good standing and are compliant with all applicable local, state, and federal regulations. Approximately 16 trips will be required to transport drilling waste per well.

Following completion of the wells, production equipment would be installed onsite within the designated well pads, and the Project would be tied into the existing gas distribution system. Pipeline remediation within the existing system in up to three locations may be required to accommodate the new gas production. Remediation would include the replacement of up to three existing pipelines if they do not meet the minimum high-pressure rating when tested. The existing pipelines would be abandoned in place (i.e., filled with water, capped, and left in place) and the new replacement pipelines would then be trenched in and installed along the existing pipeline corridor, using the same methods for new pipeline installation (refer to Section 2.4.4 for pipeline installation details). Remediation would not create any additional temporary hazards outside of those already associated with new pipeline installation and tie-in. Operational activities would involve periodic inspections by existing CRPC personnel that currently service the adjacent field(s) and wells. Well maintenance (workovers) will be conducted as necessary, typically at a rate of approximately two to three times over the operational life, of the well (approximately 30 years).

During well operation, condensate byproduct will be removed from the Project site by vacuum truck approximately once per month. Hauling and storage of materials associated with the Project would comply with all applicable federal, state, and local regulations. Transportation of materials would be conducted in accordance with applicable requirements of the U.S. DOT, including regulations governing the transport of hazardous materials, if applicable. Storage and handling of hazardous materials onsite would comply with applicable requirements administered by the local Certified Unified Program Agency, including hazardous materials management and reporting requirements, as applicable.

The byproduct water will be diverted by the free water knockout trap and accommodated within the proposed piping system. No additional storage tanks are required. All equipment will be placed within the boundaries of the graded well pad areas.

During Project operations, a number of existing regulations are in place, and Project design components are included that would reduce the potential for a release to occur. Specifically, **RR HAZ-1** would require that CRPC implement a

site-specific maintenance and inspection program based on their current gas field practices. CRPC operations include regular inspections, testing, and maintenance in accordance with applicable regulatory requirements, industry standards, and CRPC internal policies. Additionally, if an unauthorized release were to occur, **RR HAZ-2** outlines measures included in the Facilities' Consolidated Emergency Response/Contingency Plan to appropriately respond to an unauthorized release. Therefore, the Project impacts related to threat of release of hazardous materials would be less than significant.

CRPC will continue to implement their Facility Maintenance and Inspection Program during Project construction and operation. In accordance with CalGEM regulations Title 14, Division 2, Chapter 4, Section 1774.2 (Pipeline Management Plans – PMPs), the Facility Maintenance and Inspection Program shall include:

- A listing of information on each pipeline including, but not limited to:
  - Pipeline type;
  - Grade;
  - Installation date of pipeline;
  - Design and operational pressure; and
  - Leak, repair, inspection and testing history.
- A description of the testing method and schedule for all pipelines.

PMPs shall be updated within 90 days of qualifying changes and submitted to CalGEM upon request. CRPC shall submit a copy of the Facility Maintenance and Inspection Program information to CalGEM to verify compliance. CRPC shall keep PMPs current and provide them to CalGEM upon request **(RR HAZ-1)**.

CRPC shall implement the Consolidated Emergency Response/Contingency Plan in accordance with CalGEM Regulations CCR Title 14, Section 1722 (Spill Contingency Plan) to minimize potential impacts from drilling operations and enhance awareness of unauthorized releases during Project construction or operation. The Consolidated Emergency Response/Contingency Plan includes the following information addressing issues and associated responses to an unauthorized release from Project construction or operation:

- Emergency contact information.
- Emergency containment and cleanup procedures.
- Facility evacuation.
- Emergency equipment availability and location; and

- Training requirements

CRPC shall file the plan with CalGEM, maintain documentation of submittal, and update as required to reflect changes in operations or facility conditions **(RR HAZ-2)**.

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?

Less than Significant Impact. As previously discussed, construction activities would involve limited use of hazardous materials such as fuels, oils, drilling mud materials, and other chemicals that could pose risks to construction personnel in the event of an accident or spill. Implementation of **RR HAZ-2** and a Worker Safety and Environmental Awareness Project Training **(DF HAZ-1)** would provide CRPC with worker safety information and would limit the risk of hazardous materials being released into the environment. Therefore, the impact would be less than significant.

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

No Impact. There are no existing or proposed schools within 0.25 miles of the proposed Project. The nearest school to the Project area is located in the City of Rio Vista, approximately 1.25 miles northeast of the Project area within Solano County. Therefore, there would be no impact.

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?

No Impact. The Project is located within an active gas field; however, a majority of the Project area is open space and/or agriculturally developed. The SWRCB GeoTracker and DTSC databases did not identify any active hazardous cleanup sites within 0.5-mile of the Project area (SWRCB, 2025). No impact would result.

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?

No Impact. The closest private airport is Walnut Grove Airport is located approximately 7.5 miles northeast of well pad SAC-BR-1 in the Sacramento

County portion of the Project area. The nearest public airport is the Rio Vista Municipal Airport located approximately 2.1 miles northeast of well pad SOL-1 within the Solano County portion of the Project area. Project activities are not located within an airport land use planning area. As discussed in Section 5.13, Noise, the Project would not generate excessive noise for people residing or working in the Project area. Therefore, no impact would result.

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

Less Than Significant Impact. Access to the Solano and Sacramento portion of the Project area is primarily provided by State Route 12 (SR-12), a two-lane paved highway designated as a rural minor arterial by Solano County (Solano Transportation Authority, 2018). SR-12 also acts as the nearest evacuation route to the Project area, located approximately 0.75 miles northeast of the Project area in Solano County and within the northern portion of the Project area in Sacramento County (Sacramento County, 2025c; Solano County, 2008).

No lane or road closures are proposed as part of the Project. Implementation of the Project would not result in any permanent changes to roadways in the Project area, nor would it generate a substantial increase in traffic on county or levee roads. The Project is not located within a designated evacuation plan area and would not affect roadways that could be utilized for emergency response or evacuation purposes. Therefore, the impact would be less than significant.

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

Less than Significant Impact. The entire Project area is located within a CAL FIRE designated Local Responsibility Area (LRA), meaning local government is responsible for wildfire protection (CAL FIRE, 2025). No portion of the Project site is located in or near State Responsibility Areas, or lands classified as Very High Fire Hazard Severity Zones (CAL FIRE, 2023). Although construction activities would involve the use of fuels and ignition sources, most of the Project site is located on previously developed areas within the Gas Field or would be graded and cleared prior to well and equipment installation. Additionally, the Project would implement **RR HAZ-2** which includes prevention and response measures to minimize the potential for impacts. Impacts would be less than significant with mitigation.

5.9.4 Mitigation Measures

The Project would not result in significant impacts related to hazards and hazardous materials; therefore, no mitigation is required.

5.10 HYDROLOGY AND WATER QUALITY

HYDROLOGY AND WATER QUALITY – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in a substantial erosion or siltation of on- or off-site;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☐	☒
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources or polluted runoff; or	☐	☐	☐	☒

HYDROLOGY AND WATER QUALITY – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
iv) Impede or redirect flood flows?	☐	☒	☐	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

5.10.1 Environmental Setting

5.10.1.1 Groundwater - Solano Groundwater Subbasin

A groundwater basin is an ". . . aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom . . ." - Title 23, Division 2, Chapter 1.5, Subchapter 1, Article 2, Section 341(g)(1) of the CCRs.

The proposed Solano and Sacramento County well pads, access roads and pipeline alignments are located within the Solano Groundwater Subbasin, which is part of the larger Sacramento Valley Groundwater Basin.

There are two primary aquifer zones in the Solano Subbasin, the Alluvial Aquifer and Upper Tehama Zone, and the Basal Tehama Zone. Most of the groundwater pumping in the Subbasin occurs from the Alluvial Aquifer and the Upper Tehama Zone. The Basal Tehama Zone is utilized locally by the City of Vacaville and is generally found at great depths and under highly confined conditions, whereas the Alluvial Aquifer and Upper Tehama Zone are shallower. Groundwater flows from areas of higher groundwater elevation or pressure to areas of lower groundwater elevation or pressure. Prevailing groundwater flow directions in the Subbasin within the Alluvial Aquifer and Upper Tehama zone tend to be from west/northwest to east/southeast away from the English Hills and Montezuma Hills towards the Sacramento River and Delta. The Solano Groundwater Subbasin exhibits stable long-term trends in the amount of water in the groundwater system (Luhdoff & Scalmanini, 2025).

The main groundwater quality constituents of interest identified in the Subbasin include total dissolved solids, nitrate, arsenic, boron, hexavalent chromium, and chloride. Localized historical exceedances of drinking water standards have

been documented in the Subbasin for various constituents including exceedances of primary maximum contaminant levels (MCL) for nitrate and arsenic in areas of the Subbasin. Nitrate as nitrogen concentrations exceeding the MCL of 10 mg/L occur regionally in and around the cities of Dixon and Vacaville. More localized high nitrate areas also exist around several regulated facilities, including contamination sites, within the Subbasin. Nitrate is a groundwater contaminant that is commonly associated with agricultural fertilizer application or leaching from septic and wastewater systems.

Arsenic exceedances of the MCL of 10 µg/L are most common in the more southern parts of the Subbasin. The high arsenic levels in wells in the Subbasin are believed to be a result of naturally occurring arsenic in the local geologic materials.

Total dissolved solids (TDS) concentrations in parts of the Subbasin are above the recommended secondary drinking water MCL of 500 mg/L with most areas having TDS concentrations below the upper secondary MCL of 750 mg/L. Elevated TDS concentrations are most commonly associated with groundwater occurring and moving within marine geologic deposits.

Overall, groundwater quality monitoring within the Solano Groundwater Subbasin indicates contaminant levels in most of the Subbasin are less than primary MCLs and considered safe for agricultural, urban, and drinking water uses (Luhdoff & Scalmanini, 2025).

The California Department of Water Resources prioritized the Solano Groundwater Subbasin as a medium priority basin for management and development of a groundwater sustainability plan (GSP). A GSP was developed and submitted to the California Department of Water Resources for review and was approved in January of 2024.

5.10.1.2 Groundwater – East Contra Costa Groundwater Subbasin

The proposed Contra Costa County well pad, access road and pipeline alignments are located within the East Contra Costa Groundwater Subbasin, which is part of the larger San Joaquin Valley Groundwater Basin. The East Contra Costa Groundwater Subbasin aquifer system is subdivided into two zones: an upper unconfined Shallow Zone that sits above discontinuous to locally continuous clay layers and, a lower semi-confined to confined Deep Zone. Most water wells are constructed within the upper 400 feet where coarse grained units are identified. Water well information is lacking for depths below 400 feet below ground surface to the base of freshwater, but the units are likely fine grained and become brackish at and below that depth.

Groundwater levels in East Contra Costa Groundwater Subbasin wells are stable and groundwater conditions in the Subbasin are consistent with sustainable use. The water levels, by virtue of their consistent seasonal recoveries, also indicate

that the Subbasin on the whole is full, with no room for additional groundwater recharge.

Groundwater in the Subbasin generally exceeds or is near the recommended Secondary Maximum Contaminant Level (SMCL) for total dissolved solids (500 mg/L) and chloride (250 mg/l). The observed concentrations may reflect a naturally higher baseline for these constituents. Nitrate is observed in some Shallow Zone areas (e.g., Brentwood) in the Subbasin, with concentrations generally exceeding the MCL (10 mg/L) that may be linked to past agricultural influences in the area. Arsenic concentrations are generally less than the MCL (10 ug/L) basin wide. Boron concentrations are high in most wells and are attributed to a naturally elevated baseline (Luhdorff & Scalmanini, 2021).

The California Department of Water Resources prioritized the East Contra Costa Groundwater Subbasin as a medium priority basin for management and development of a GSP. A GSP was developed and submitted to the California Department of Water Resources for review and was approved on July 27, 2023.

5.10.1.3 Surface Water

The project is located within the Sacramento-San Joaquin Delta, which is the center of California's water supply, providing fresh water to the majority of the state's population and to millions of acres of farmland. It is the largest estuary on the West Coast and provides critical habitat to fish and wildlife species. The Solano Groundwater Subbasin is located in the western portion and the East Contra Costa Groundwater Subbasin is located in the southwestern part of the Delta. The Delta is a 1,300 square mile area where the Sacramento, San Joaquin, and Mokelumne Rivers come together that was once a tule marsh. In the mid to late 1800s and early 1900s, settlers installed a levee system that formed many of the islands. When the islands were dewatered for agricultural development, land subsidence resulted from oxidation of organic soils, some Delta Islands in the Subbasin have lowered more than 15 feet in response to peat oxidation (not related to groundwater extraction). Problems facing the Delta are compounding because subsiding delta islands and rising sea levels would increase pressure on the levees and rising sea level would push salt water further into the delta.

The Delta is composed of three zones. The Primary Zone is the center of the Delta, the largest zone (490,050 acres) and is primarily rural farmland but includes a few small towns. The Secondary Zone includes 247,320 acres of farmland and cities and suburbs. The third area (Suisun Marsh) is northwest of the Primary Zone. Two state agencies have land use jurisdiction in the Delta: Delta Stewardship Council described in the Delta Plan (updated 2024), and the Delta Protection Commission. These agencies have concurrent jurisdiction in the Delta's Primary Zone to ensure that local land use planning is consistent with their own laws and plans.

The Sacramento County and Contra Costa County well sites are located within the Primary Zone, while the proposed Solano County well sites are not located within the legal delta and not managed under the Delta Plan.

About two-thirds of the islands and tracts in the Sacramento-San Joaquin Delta are below sea level and are surrounded by levees that protect the land from floods and high tides. There are more than 1,100 miles of levees in the delta contracted to protect farmland. The predominant land use of the islands in the project area is agriculture with a small population of farm workers. Agencies with responsibilities for levee maintenance and drainage systems in the project area include Bethel Island Municipal Improvement District, Reclamation District (RD) 2025 (Holland Tract), RD 341 (Sherman Island), RD 2026 (Webb Tract), RD 1601 (Twitchell Island) and RD 2059 (Bradford Island) (Luhdorff & Scalmanini, 2021).

5.10.1.4 Flood Hazards

Based on Flood Insurance Rate Maps developed by the Federal Emergency Management Agency, all of the proposed well pads, access road and pipeline alignments located in Sacramento County and Contra Costa County are located within areas designated as Zone AE (1 percent annual flood chance hazard) and are considered high-risk flood areas. Proposed well pads and other facilities located in Solano County are not located with designated flood hazard areas.

5.10.2 Regulatory Setting

Federal, state, and local regulations, laws, rules, policies, or other mandatory guidance from a lead or responsible agency pertaining to hydrology and water quality are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.10.2.1 Federal

Clean Water Act (CWA) (33 U.S.C. §§ 1251 et seq.). The federal CWA established the basic structure for regulating discharges of pollutants into "waters of the United States." The CWA specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA includes the following sections:

- Sections 303 and 304, which provide water quality standards, criteria, and guidelines.
- Section 401, which requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards **(RR HYDRO-1)**.

- Section 402, which regulates point-source and nonpoint-source discharges to surface waters through the NPDES program.
- Section 404, which establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands **(RR HYDRO-2)**.

The NPDES permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify the following:

- Effluent and receiving-water limits on allowable concentrations and/or mass emissions of pollutants contained in the discharge.
- Prohibitions on discharges not specifically allowed under the permit; and
- Provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

In November 1990, the U.S. EPA published regulations establishing NPDES permit requirements for municipal and industrial stormwater discharges. Phase 1 of the permitting program applied to municipal discharges of stormwater in urban areas where the population exceeded 100,000 persons. In California, the U.S. EPA has delegated its NPDES permitting functions to the SWRCB and the regional boards.

Rivers and Harbors Act (33 U.S.C. § 403). The Rivers and Harbors Act requires a permit or letter of permission from USACE prior to any work being completed within navigable waters. Section 10 of the Act requires USACE to issue permits for construction, dumping, and dredging in navigable waters as well as construction of piers, wharves, weirs, jetties, outfalls, aids to navigation, docks, and other structures **(RR HYDRO-3)**.

The Safe Drinking Water Act (42 U.S.C. § 300f et seq.). The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. The regulations allow for disposal of water produced during petroleum production if the aquifer is an underground source of drinking water if the aquifer is determined to be exempt by the U.S. EPA in accordance with an exemption application and review process (40 CFR 146.4). For oil and gas production and Class II well operations, an aquifer may be designated as "exempted" if it does not currently serve as a source of

drinking water and cannot currently or in the future serve as a source of drinking water because it is 1) mineral, hydrocarbon, or geothermal energy producing, or can be demonstrated to contain commercially producible minerals or hydrocarbons; 2) situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or (3) so contaminated that it would be economically or technologically impractical to render the water fit for human consumption. In 1983, California was granted primacy to regulate Class II wells under the SDWA and must meet federal requirements for the UIC program, including construction, operating, monitoring and testing, reporting, and closure requirements for well owners or operators. All UIC injection activity in the state must be permitted by CalGEM. Class II well operators must meet well construction and conversion standards and perform regular testing and inspection to ensure well integrity. In general, the UIC regulations (40 CFR 146 et seq.) require that owners and operators of new Class II injection wells: (1) site wells in locations free of faults and other adverse geological features; (2) drill to a depth that allows the injection into formations that do not contain and underground source of drinking water, or that contain only exempt aquifers, and that are confined from any other formation that may contain potential drinking water sources; (3) inject fluids through an internal pipe (tubing) that is located inside another pipe (casing), with cement placed between the outside pipe and the well borehole; (4) test well integrity at the time of completion and at least every five years thereafter; and (5) continuously monitor well integrity. CalGEM administers the UIC program for Class II wells in California.

Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.). The Porter-Cologne Water Quality Control Act, which is the principal law governing water quality regulation in California, establishes a comprehensive program to protect water quality and beneficial uses of state waters. The Act established the SWRCB and nine RWQCBs, which are charged with implementing its provisions and have primary responsibility for protecting water quality in California. The Act also implements many provisions of the federal CWA, such as the NPDES permitting program. CWA Section 401 gives the SWRCB the authority to review any proposed federally permitted or federally licensed activity that may impact water quality and to certify, condition, or deny the activity if it does not comply with state water quality standards. If the SWRCB imposes a condition on its certification, those conditions must be included in the federal permit or license.

Establishment of the NPDES regulations in 1987, under Section 402(p) of the CWA, required that the U.S. EPA delegate the responsibility of the NPDES program to the state. The SWRCB was given the responsibility to enforce the regulations of the NPDES program. Industrial facilities and construction sites are regulated by the SWRCB through general stormwater permits.

Stormwater discharges from municipal separate storm drain systems are regulated through NPDES permits issued by the RWQCB. Since 1990, operators of large storm drain systems have been required to do the following: (1) develop a stormwater management program designed to prevent harmful pollutants from being dumped or washed by stormwater runoff into the stormwater system, then discharged into local water bodies; and (2) obtain an NPDES permit.

State Water Resources Control Board Stormwater Permits (Cal. Code Regs. tit. 23, § 2200 et seq). The SWRCB has developed a General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit, or CGP) (Order No. 2022-00057-DWQ as amended in 2015 (2015-0122-DWQ and in 2018 (adopted but not certified), and a General Industrial Activities Stormwater Permit (Industrial General Permit, or IGP) (Water Quality Order 2014-0057-DWQ) for projects that do not require an individual permit for these activities.

The IGP is a statewide general NPDES permit issued by the SWRCB that regulates stormwater discharges associated with 10 broad categories of industrial activities. The IGP requires dischargers to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to reduce or prevent industrial pollutants in stormwater discharges, eliminate unauthorized non-storm discharges, and conduct visual and analytical stormwater discharge monitoring to verify the effectiveness of the SWPPP. The CGP is a statewide general NPDES permit issued by the SWRCB under Order No. Order 2022-0057-DWQ that regulates stormwater discharges from construction projects that encompass at least 1 acre of soil disturbance, unless the discharge is in compliance with an NPDES permit. The CGP applies to all stormwater discharges associated with construction activities within the Project area. Under this permit, all construction activities that disturb 1 acre or more must:

- Prepare and implement a SWPPP that specifies Best Management Practices to prevent all construction pollutants from contacting stormwater. The intent of the SWPPP and Best Management Practices is to keep all products of erosion from moving off site into receiving waters; and,
- Eliminate or reduce non-stormwater discharges to storm sewer systems and waters of the U.S.

Based on the proposed area of disturbance associated with the Project (greater than 1 acre of disturbance), a SWPPP will be prepared and implemented for Project activities **(RR HYDRO-4)**.

California Toxics Rule (40 C.F.R. § 131.38.). In 2000, the U.S. EPA promulgated federal water quality standards for the State of California after previously adopted water quality objectives for toxic pollutants were overturned in a court

proceeding. These federal water quality standards are known as the California Toxics Rule (CTR) and have since been incorporated into regional basin plans, where applicable. The State Board has adopted a policy implementing the CTR (Resolution 2000-015, as amended by Resolution 2000-30). The CTR specifies water quality criteria for 128 priority pollutants based on toxicity to aquatic species, which are used as a basis for the establishment of effluent limitations in NPDES permits. The CTR is applicable to surface waters only.

Oil and Gas Well Construction Standards (Cal. Code Regs. tit. 14, § 1722). Oil and gas well drilling, construction, operation, and abandonment activities in California are regulated by CalGEM. These regulations establish minimum statewide standards for well design, casing, cementing, drilling fluids, and well control to ensure well integrity and protect public health, safety, and environmental resources, including groundwater. CalGEM implements these requirements through a permitting and inspection program that includes review and approval of well construction plans and field oversight during drilling and completion. Compliance with these standards is intended to isolate subsurface geologic zones, prevent migration of drilling fluids, hydrocarbons, and formation fluids, and maintain the integrity of groundwater resources throughout well construction and operation **(RR HYDRO-5)**.

Senate Bill (SB) 1281, Disclosure of Oil and Gas Water Use and Disposal (Pub. Resources Code §§ 3261–3261.5). SB 1281, effective January 2015, amended the Public Resources Code to require that well operators provide CalGEM with quarterly information regarding the source and disposition of water produced by or used in oil and gas production in addition to existing obligations to report gas and oil production and produced water information on a monthly basis.

Sustainable Groundwater Management Act (Cal. Water Code §§ 10720–10737.8). In 2014, California enacted the Sustainable Groundwater Management Act (Water Code §10720 et seq.). The Act, and related amendments to California law, require that all groundwater basins designated as high or medium priority in DWR's California Statewide Groundwater Elevation Monitoring Program (CASGEM), and that are subject to critical overdraft conditions, must be managed under a new GSP, or a coordinated set of GSPs. High- and medium-priority basins that are not subject to critical overdraft conditions must also be managed under a GSP. Where GSPs are required, one or more local groundwater sustainability agencies (GSAs) must be formed to cover the basin and prepare and implement applicable GSPs.

A GSA has the authority to require registration of groundwater wells, measure and manage extractions, require reports and assess fees, and to request revisions of basin boundaries, including establishing new subbasins. The Sustainable Groundwater Management Act defines groundwater as "water beneath the surface of the earth within the zone below the water table in which

the soil is completely saturated with water but does not include water that flows in known and definite channels. Potentially affected groundwater basins are discussed in Section 5.10.1.

5.10.2.2 Local

Solano County General Plan

Resources Element

- **Policy RS.G-10:** Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
- **Policy RS.P-28:** Protect long-term water quality in the Delta in coordination with water agencies at local, state, and federal levels for designated beneficial uses, including agriculture, municipal, water-dependent industrial, water-contact recreation, boating and fish and wildlife habitat
- **Policy RS.P-64:** Identify, promote, and seek funding for the evaluation and remediation of water resource or water quality problems through a watershed management approach. Work with the regional water quality control board, watershed-focused groups, and stakeholders in the collection, evaluation and use of watershed-specific water resource information.
- **Policy RS.P-70:** Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion.
- **Policy RS.P-72:** Preserve riparian vegetation along county waterways to maintain water quality.
- **Policy RS.P-73:** Use watershed planning approaches to resolve water quality problems. Use a comprehensive stormwater management program to limit the quantity and increase the water quality of runoff flowing to the county's streams and rivers.

Sacramento County General Plan

- **Policy SA-10**: Fill within the 100-year floodplain of creeks outside of the Urban Service Boundary is permissible to accommodate structures (e.g., residential, commercial, accessory) and septic systems, and only when the Board of Supervisors finds that the fill will not impede water flows or storm runoff capacity. Such development shall not cause an increase in base flood elevation of the 100-year

floodplain exceeding 0.10 feet, unless analysis clearly indicated that the physical and/or economic use of adjacent property within the floodplain will not be adversely affected.

- **Policy SA-13:** Where new upstream development in Sacramento County will increase or potentially impact runoff onto parcels downstream in a neighboring jurisdiction, such as the City of Sacramento, Sacramento County will coordinate with the appropriate neighboring jurisdiction to mitigate such impacts.
- **Policy SA-14:** The County shall require, when deemed to be physically or ecologically necessary, all new urban development and redevelopment projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.
- **Policy SA-22:** Areas within a 100-year floodplain, or within the 200-year floodplain in areas subject to the Urban Level of Flood Protection, shall not be upzoned to a more intensive use unless and until a Master Drainage Plan is prepared that identifies areas of the floodplain that may be developed.
- **Policy SA-22a:** Sacramento County will evaluate development projects, and all new construction located within a defined Flood Hazard Zone (FHZ) to determine whether the 200-year Urban Level of Flood Protection or 100-year FEMA flood protection applies, and whether the proposed development or new construction is consistent with that standard.
- **Policy SA-22b:** New development shall be elevated as required by the applicable flood standards (100-year, or 200-year in areas subject to the Urban Level of Flood Protection) and should be constructed to be resistant to flood damage consistent with the Floodplain Management Ordinance.
- **Policy CO-30:** Require development projects to comply with the County's stormwater development/design standards, including hydromodification management and low impact development standards, established pursuant to the NPDES Municipal Permit.
- **Policy CO-31:** Require property owners to maintain all required stormwater measures to ensure proper performance for the life of the project
- **Policy HM-9:** Continue the effort to prevent surface water contamination.

Sacramento County developed a Floodplain Management Ordinance effective February 9, 2024, which requires a flood management permit for new development in flood hazard areas and includes standards of construction for such development.

Contra Costa County General Plan

- **Policy COS-P7.3**: For projects in areas without a water service provider, require proof of adequate on-site groundwater during the development review process.
- **Policy COS-P7.4**: Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code.
- **Policy COS-P7.6**: Require new development to reduce water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water where available.
- **Policy COS-P7.7**: Require landscaping for new development to filter and retain runoff and support flood management and groundwater recharge.
- **Policy HS-P5.3**: For any development project in a FEMA- or DWR-designated floodplain, require review by the Floodplain Manager to consider potential downstream flood damage that may result from the project.
- **Policy HS-P5.4**: Evaluate development within the Sacramento-San Joaquin Valley for consistency with DWR's Urban Level of Flood Protection Criteria. Prohibit new single-family residences, density increases, subdivision maps, or development agreements for any property within a 200-year floodplain in an urban or urbanizing area, unless an adequate finding can be made pursuant to California Water Code Sections 9600 to 9603.

Contra Costa County developed a Floodplain Management Ordinance (§ 82-28 of the County Ordinance Code) which requires a flood management permit for new development in flood hazard areas and includes standards of construction for such development (§ 82-28.1002).

5.10.3 Impact Analysis

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

Less than Significant with Mitigation. The Project would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance and approximately 25.4 acres of permanent disturbance to accommodate access roads, well pads, and pipelines. These estimated disturbance acreages are based on GIS analysis using shapefiles of the Project footprint supplied by CRPC. As discussed within Section 5.4 (Biological Resources), some of the Project components may cross through or extend into wetland habitats (e.g., riparian, freshwater emergent, riverine-adjacent) based on the reconnaissance-level 2025 field surveys and desktop review of the USFWS NWI (Refer to Table 5.4-1 for a list of the Project components located within or near wetlands and approximate wetland impacts [temporary and permanent]). These wetlands may be considered state and/or federal jurisdictional wetlands. Depending on the jurisdictional status and extent of the wetlands in or near the Project footprint, CRPC shall obtain all applicable permits and authorizations prior to initiating work in jurisdictional areas. Copies of all required permits shall be submitted to CalGEM prior to applicable construction activities. Such permits and authorizations may include:

- Clean Water Act Section 401 Water Quality Certification by the Central Valley Regional Water Quality Control Board (CVRWQCB) **(RR HYDRO-1)**
- Clean Water Act Section 404 Discharge/Fill Permit by the USACE **(RR HYDRO-2)**
- Rivers and Harbors Act Section 10 Permit by the USACE by the USACE **(RR HYDRO-3)**
- Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement with CDFW **(RR BIO-1)**

Implementation of **MM BIO-11**, **MM BIO-12**, **MM BIO-13,** and **MM BIO-14** will mitigate impacts to surface waters to a less than significant level by delineating the boundaries of jurisdictional wetlands, creating avoidance buffers and ensuring activities occur inside the designated footprint, securing authorizations to alter the wetlands, if needed, and revegetating temporary work areas within wetlands following Project completion.

In addition, implementation of **MM BIO-15** would reduce impacts to surface waters to less than significant by ensuring jurisdictional wetlands outside of the Project footprint are protected from runoff.

The proposed pipeline connection to well pad CC-1 would cross the San Joaquin River but would be inserted into an existing pipe conduit and avoid disturbance of the riverbed and associated surface water quality impacts.

Ground disturbance and drilling activities could result in erosion or runoff of sediments and pollutants. Following well development and construction of ancillary facilities including installation of subsurface production lines, CRPC would place gravel within the new well pads and access roads, as appropriate to facilitate drainage and stability following installation. In addition, implementation of **RR HAZ-2** would reduce impacts to surface waters to less than significant by implementing contingencies in case of incidental spills or leaks during Project construction activities.

The proposed wells would pass through the aquifers of the Solano and East Contra Costa Groundwater Subbasins. However, potential impacts to groundwater quality from contamination by drilling fluids during well drilling or contamination by natural gas during production would be prevented through the proper use of casing and cementing as part of the Project design (refer to Section 2.4 for details). Casing and cementing would be completed per CalGEM regulations and in accordance with Title 14 CCR, Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1722, 1722.2, 1722.3, 1722.4, 1722.5 and 1722.6 **(RR HYDRO-5)**. Therefore, impacts to groundwater quality would not occur.

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

Less than Significant Impact. The proposed Project would not interfere with groundwater supplies or recharge. Impervious surfaces associated with the proposed project that may reduce rainfall infiltration and aquifer recharge are limited to very small concrete areas adjacent to each wellhead. These areas would be highly dispersed over the 29,000-acre Rio Vista Gas Field and would not have an effect on groundwater recharge.

Approximately 25.6 acre-feet of water would be used for drilling 71 wells in Solano and Sacramento counties, based on 2,800 barrels per well. Additional water may be used for dust control and soil compaction during construction. Water would be purchased from the Calpine facility in the City of Rio Vista approximately three miles from the Project area and trucked to the Project site. Since this Subbasin exhibits stable long-term trends in the amount of water in the groundwater system, short-term project-related use of groundwater would not impede sustainable groundwater management.

Approximately 4.3 acre-feet of water would be used for drilling 12 wells in Contra Costa County, based on 2,800 barrels per well. Additional water may be used for dust control and soil compaction during construction. The specific source of water for Project activities within Contra Costa County is to be determined but is anticipated to originate from the East Contra Costa Groundwater Subbasin, that supplies public water for eastern Contra Costa County. Since this Subbasin

exhibits stable and sustainable groundwater levels, short-term project-related use of groundwater would not impede sustainable groundwater management.

The Project would not use groundwater during operations. Based on the foregoing, potential groundwater impacts caused by the proposed Project would be less than significant.

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

i. Result in a substantial erosion or siltation of on- or off-site?

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources or polluted runoff?

iv. Impede or redirect flood flows?

(c)(i.) Less than Significant Impact. The proposed well pads and access roads would be surfaced with gravel to facilitate drainage and stability following installation. As a result, soil erosion and siltation associated with vehicle use of access roads and well pads would be minimized.

(c)(ii-iii.) No Impact. There would be no substantial increase in the amount of surface runoff that would result in flooding offsite. Because there are no developed stormwater management systems in the vicinity of proposed well pads, there would be no adverse effects to such facilities.

(c)(iv.) Less than Significant with Mitigation. As described above, the Project would require approximately 129.7 acres of new disturbance, with approximately 104.3 acres of temporary disturbance and approximately 25.4 acres of permanent disturbance to accommodate access roads, well pads, and pipelines. As discussed within Section 5.4 (Biological Resources), some of the Project components may cross through or extend into wetland habitats (e.g., riparian, freshwater emergent, riverine-adjacent) based on the reconnaissance-level 2025 field surveys and desktop review of the USFWS NWI (Refer to Table 5.4-1 for a list of the Project components located within or near wetlands and approximate wetland impacts [temporary and permanent]). These wetlands may be considered state and/or federal jurisdictional wetlands. Depending on the jurisdictional status and extent of the wetlands in or near the Project footprint, some of the following authorizations may be required:

- Clean Water Act Section 401 Water Quality Certification by the Central Valley Regional Water Quality Control Board (CVRWQCB) **(RR HYDRO-1)**
- Clean Water Act Section 404 Discharge/Fill Permit by the USACE **(RR HYDRO-2)**
- Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement with CDFW **(RR BIO-1)**

Implementation of **MM BIO-11**, **MM BIO-12**, **MM BIO-13, MM BIO-14,** and **MM BIO-15** will mitigate impacts to the existing drainage pattern of the Project area to a less than significant level by delineating the boundaries of jurisdictional wetlands/waterways, creating avoidance buffers and ensuring activities occur inside the designated footprint, securing authorizations to alter the wetlands, if needed, revegetating temporary work areas within wetlands following Project completion, and ensuring jurisdictional wetlands outside of the Project footprint are protected from runoff.

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

No Impact. All proposed well pads, access roads and pipelines in Sacramento and Contra Costa counties would be located in flood hazard areas. However, the proposed facilities would be limited to natural gas wells and pipelines, which would be properly anchored to prevent flotation, collapse, or lateral movement caused by hydrodynamic and hydrostatic forces during a flood event. Therefore, a natural gas leak or pollutant release is not anticipated.

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

Less Than Significant Impact. Project-related discharges would be limited to stormwater during the construction period which may contain sediment and other pollutants. The proposed Project would comply with the Construction General Permit and implement a SWPPP to minimize discharge of pollutants to surface waters **(RR HYDRO-4)**. Therefore, the proposed Project would not conflict with implementation of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins.

As noted in response to b) above, implementation of the Project would not conflict with sustainable management of the Solano or East Contra Costa Groundwater Subbasins.

The proposed wells to be located in Sacramento County and Contra Costa County are within the Primary Zone planning area of the Delta Plan, but would

not conflict with the protection, restoration and enhancement of the Delta as described in the Plan.

5.10.4 Mitigation Measures

Implementation of the following mitigation measures would reduce the potential for hydrology and water quality impacts to less than significant:

- MM BIO-11: Preliminary Aquatic Resource Delineation
- MM BIO-12: Temporary Flagging or Barrier Fencing to Protect Sensitive Habitat
- MM BIO-13: Compliance with Permit Conditions for Impacts to Jurisdictional Wetlands and Waterways
- MM BIO-14: Revegetation of Temporary Work Areas
- MM BIO-15: Erosion Control Best Management Practices

5.11 LAND USE AND PLANNING

LAND USE AND PLANNING – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

5.11.1 Environmental Setting

The proposed Project includes the installation of 83 wells in unincorporated Solano, Sacramento, and Contra Costa counties, California. The closest incorporated residential area is the City of Rio Vista, located approximately 0.8 miles east of the SOL-3 Well Pad in Solano County using geospatial measurements from aerial imagery. The surrounding land uses include agricultural, open space, rural residential, and industrial development. The Project parcels are zoned primarily for agricultural use, as further described below (Table 5.11-1) (Sacramento County, 2022 and 2017; Solano County, 2008; Contra Costa County, 2024a).

- The Solano County Project parcels are zoned by the Zoning Code (Chapter 28 of the Solano County Code) as Exclusive Agriculture with a minimum parcel size of 160 acres (A-160) (Solano County, 2024).
- The Sacramento County Project parcels are zoned by the Zoning Code (Chapter 2 of the Sacramento County Code) as Agriculture with a minimum parcel size of 80 acres (AG-80) (Sacramento County, 2025).
- The Contra Costa County Project parcels are zoned by the Zoning Code (Table 1500-05-1 of the Contra Costa County Zoning Code) as Agricultural Lands with a minimum parcel size of 40 acres (Contra Costa County, 2025).

Table 5.11-1. Land Designations and Zoning Regulations by County

County	Land Use Designation	Zoning Designation and Allowed Uses/Regulations
Solano	Grazing	**A-160:** Allows oil and gas drilling in Agricultural and Grazing Lands upon issuance of an oil and gas well drilling permit by the Zoning Administrator.
Sacramento	Agricultural Crop	**AG-80:** Allows for oil and gas extraction in agricultural zoning district so long as it is located outside of 1,000 feet of the boundary of property zoned for residential, interim residential, interim estate, or recreational purposes.
Contra Costa	Agricultural Lands	**AG-82-1.014** - Agricultural protection policies; minimum parcel sizes.: According to Table 1500-05-1, oil and gas extraction and injection wells are allowed uses within the Agricultural district with the acquisition of a Zoning Clearance or Use Permit. Oil and gas drilling and production activity is allowed within the Agricultural Lands districts subject to the administrative review and approval of the zoning administrator.

5.11.2 Regulatory Setting

There are no relevant federal laws or regulations pertaining to land use and planning applicable to the Project. State and local laws, regulations, and policies applicable to land use and planning relevant to the Project are set forth below.

5.11.2.1 State

Senate Bill (SB) 1137 (Pub. Resources Code §§ 3280-3284). SB 1137 establishes an HPZ around sensitive receptors located within 3,200 feet of oil and gas production wells and production facilities. SB 1137 bans the development of new oil and gas wells in the HPZ and requires operators of existing oil and gas wells in a HPZ to develop and submit a leak detection and response plan.

5.11.2.2 Local

Solano County General Plan (2008)

Chapter 2, Land Use

- **Policy LU.P-28:** Locate and develop industrial uses in a manner that does not conflict with adjacent and surrounding agricultural activities and protects water quality and marshland and wetland habitats.

Sacramento County General Plan (2022)

Chapter 1, Agriculture Element

- **Policy AG-5:** Projects resulting in the conversion of more than 50 acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland categories through the specific planning process or individual project entitlement requests to provide in-kind or similar resource value protection (such as easements for agricultural purposes):
    - Prime, statewide importance, unique, local importance, and grazing farmlands located outside the Urban Services Boundary (USB).
    - Prime, statewide importance, unique, and local importance farmlands located inside the USB.

  The Board of Supervisors retains the authority to override impacts to Unique, Local, and Grazing farmlands, but not with respect to Prime and Statewide farmlands.

  However, if that land is also required to provide mitigation pursuant to a Sacramento County endorsed or approved Habitat

Conservation Plan (HCP), then the Board of Supervisors may consider the mitigation land provided in accordance with HCP as meeting the requirements of this section including land outside of Sacramento County.

Sacramento County Zoning Code (2025)

Chapter 3, Use Regulations

- **Standard 3.8.1.B. Gas or Oil Well**

  A gas or oil well shall comply with the following minimum standards:

  1. Gas or oil well sites proposed in an industrial or agricultural zoning district shall not be located within 1,000 feet of the boundary of property zoned for residential, interim residential, interim estate, or recreational purposes.

  2. No proposed gas or oil well site shall be located within 300 feet of a structure used for human habitation.

Contra Costa County Ordinance

Chapter 88-14 – Oil and Gas Drilling and Production

- Chapter 88-14 establishes County requirements governing oil and gas drilling and production activities, including applicable land use districts and permitting requirements. Section 88-14.402 identifies circumstances in which oil and gas drilling and production activities are permitted subject to administrative review, while Section 88-14.404 identifies activities requiring a land use permit.

Contra Costa County General Plan (2024)

Chapter 4, Land Use Element

- **Policy LU-P2.3** Limit development outside the Urban Limit Line to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.

Chapter 7: The Conservation, Open Space, and Working Lands Element

- **Action COS-A14.1** The General Plan calls for the County to amend Chapter 88-14 to establish additional restrictions and requirements for oil and gas development, including restrictions in specified sensitive areas, limiting drilling operations to agricultural zoning districts, requiring land use permits for new and expanded wells, requiring reclamation plans with bonding, and establishing performance standards. Because COS-A14.1 is an action directing a future ordinance amendment,

rather than the ordinance itself, the action is not treated as an existing regulatory requirement.

5.11.3 Impact Analysis

a) Physically divide an established community?

No Impact. The proposed Project is located within the Rio Vista Gas Field outside of the nearest established community (the City of Rio Vista, located approximately 0.8 miles east of the SOL-3 Well Pad in Solano County). The Project does not involve any new structures or roadways and would not divide any community. Therefore, there would be no impact.

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?

Less Than Significant Impact. The Project area is located within land designated as Grazing Land and Urban and Built-Up Land by the Solano County General Plan, Agricultural Crop Land by the Sacramento County General Plan, and Agricultural Lands by Contra Costa General Plan (Sacramento County, 2022 and 2017; Solano County, 2008; Contra Costa County, 2024a).

Solano County Zoning Regulations allows oil and gas drilling in Agricultural and Grazing Lands districts upon issuance of an oil and gas well drilling permit by the Zoning Administrator (Solano County, 2024). Sacramento County Zoning allows for oil and gas extracting in agricultural zoning district so long as it is located outside of 1,000 feet of the boundary of property zoned for residential, interim residential, interim estate, or recreational purposes (Sacramento County, 2025). As defined in Section 88-14.402 of the Contra Costa County Zoning Ordinance, oil and gas drilling and production activity is allowed within the Agricultural Lands districts subject to the administrative review and approval of the zoning administrator (Contra Costa Zoning, 2024). As defined in the above Zoning Ordinances, oil and gas extraction uses are permitted uses within the Project parcels. Gas extraction is allowed within agricultural zoning districts in all three counties so long as it is located outside of 1,000 feet of the boundary of property zoned for residential, interim residential, interim estate, or recreational purposes. The Project boundaries are over 1,000 feet from the boundary of any property zoned for residential, interim residential, interim estate, or recreational purposes; therefore, Project activities are consistent with the Solano, Sacramento, and Contra Costa County General Plans and Zoning Codes, and existing grazing and extraction well uses.

The proposed Project would not result in any change in land use or conflict with any regional land use plan or policy; nor would the Project conflict with the

requirements of the Solano, Sacramento, and Contra Costa County Climate Action Plans (Sections 5.3 and 5.8). As demonstrated in Table 5.11-2, the Project would be consistent with all applicable land use local policies with respect to gas development within Solano, Sacramento, and Contra Costa counties, therefore a less than significant impact would result.

Table 5.11-2. Summary of Project Consistency with Local Land Use Policies

Regional Land Use Plan/Code	Policy	Consistency
Solano County General Plan	**Chapter 3, Agriculture Element, Goal AR. G-2:** Preserve and protect the county's agricultural lands as irreplaceable resources for present and future generations.	**Consistent.** The proposed Project is located within the existing Rio Vista Gas Field and partially within agricultural lands. The Project would result in approximately 17.3 acres of permanent conversion of agricultural lands, however, Project activities, including the addition of new gas wells, are an allowable use within land zoned for agriculture.

Regional Land Use Plan/Code	Policy	Consistency
Solano County General Plan	**Chapter 5, Land Use Element, Goal LU.G-4:** Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.	**Consistent.** The proposed Project is located within an existing Gas Field. While the implementation of the Project and associated construction activities would increase vehicles and equipment on roads adjacent to the Project site, this increase in traffic would be temporary. The Project would not result in permanent environmental impacts or cause disruption to traffic patterns and circulation and transportation systems.
Solano County General Plan	**Chapter 5, Land Use Element, Policy LU.P-28**: Locate and develop industrial uses in a manner that does not conflict with adjacent and surrounding agricultural activities and protects water quality and marshland and wetland habitats.	**Consistent.** The proposed Project is located within the existing Rio Vista Gas Field. Though the Project site is within areas that contain agricultural lands, wetlands, and waterways, Project activities have been designed to minimize potential impacts to water quality and wetland habitats. Specifically, MM-BIO-11: Preliminary Aquatic Resource Delineation and MM BIO-13: Compliance With Permit Conditions for Impacts to Waters of the

Regional Land Use Plan/Code	Policy	Consistency
		U.S. would be implemented throughout and following the Project to mitigate for potential impacts to wetlands.
Solano County General Plan	**Chapter 8. Public Facilities and Services Element, Goal PS:** ensuring sustainable provision of energy, water, and mineral resources.	**Consistent.** The proposed Project is an expansion of gas extraction capabilities in an existing Gas Field. As such, the Project will result in additional energy resources for the region in accordance with this goal.

Regional Land Use Plan/Code	Policy	Consistency
Solano County General Plan	**Chapter 8. Public Facilities and Services Element, Policy RS.P-58:** Require the siting of energy facilities in a manner compatible with surrounding land uses, including Travis Air Force Base, and in a manner that will protect scenic resources.	**Consistent.** Zoning and land use designations for the Project site locations within Solano County are classified as grazing land. Solano County allows oil and gas drilling in Agricultural and Grazing Lands upon issuance of an oil and gas well drilling permit by the Zoning Administrator. The proposed Project is located within an existing Gas Field designated by CalGEM. The existing Rio Vista Gas Field boundary is approximately 12 miles southeast of Travis Air Force Base. The implementation of the proposed Project would be consistent with surrounding land uses.
Sacramento County Zoning Code	**Chapter 3, Use Regulations, 3.8.1.B. Gas or Oil Well** A gas or oil well shall comply with the following minimum standards: 1. Gas or oil well sites proposed in an industrial or agricultural zoning district shall not be located within 1,000 feet of the boundary of property zoned for residential, interim residential, interim estate, or recreational purposes.	**Consistent.** The proposed Project is located within an existing gas field designated by CalGEM. The proposed Project is sited within agricultural lands and is located over 1,000 feet away from any property zoned for residential, interim residential, interim estate, or recreational purposes.

Regional Land Use Plan/Code	Policy	Consistency
	2. No proposed gas or oil well site shall be located within 300 feet of a structure used for human habitation.	For each NOI, CalGEM will determine whether the proposed well is within an HPZ. Under PRC Section 3281, CalGEM cannot approve an NOI for a well located within an HPZ unless a statutory exception applies.
Sacramento County General Plan	**Chapter 1: Agriculture Element, Policy AG-5** : Projects resulting in the conversion of more than 50 acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland…	**Consistent.** The proposed Project is located within the existing Rio Vista Gas Field, which is partially located within agricultural lands. The Project would result in approximately 17.3 acres of permanent conversion of farmland; however, this is less than the 50-acre threshold set by Sacramento County; therefore, the Project is consistent with this policy.
Contra Costa County General Plan (2024)	**Chapter 3: Agriculture Element, Goal AR.G -2**: Preserve and protect the county's agricultural lands as irreplaceable resources for present and future generations.	**Consistent.** The proposed Project is located within land designated by Contra Costa County as agricultural lands. The County allows for oil and gas drilling and production activity within the Agricultural Lands districts subject to the administrative review and approval of the zoning administrator. The Project will result in the conversion of

Regional Land Use Plan/Code	Policy	Consistency
		approximately 2.36 acres of agricultural lands in Contra Costa County. The proposed Project represents allowable use to the agricultural lands in Contra Costa County.
Contra Costa County General Plan (2024)	**Chapter 8: Public Facilities and Services Element, Goal:** ensuring sustainable provision of energy, water, and mineral resources**.**	**Consistent.** The proposed Project will result in a temporary increase in energy consumption during Project implementation; however this will return to baseline conditions after construction activities have concluded. The Project will have no permanent impact on the sustainable provision of energy, water, and mineral resources.

5.11.4 Mitigation Measures

The Project would not result in significant impacts related to land use; therefore, no mitigation is required.

5.12 MINERAL RESOURCES

MINERAL RESOURCES – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
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?	☐	☐	☐	☒
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?	☐	☐	☒	☐

5.12.1 Environmental Setting

The Project site is located in portions of Solano, Sacramento, and Contra Costa counties within the CalGEM administrative boundary for the active Rio Vista Gas Field (CalGEM, 2025). The Rio Vista Gas Field was discovered in 1936 and is the largest gas field in the Sacramento Basin of Northern California. The Gas field is the largest dry gas field in the state, with an estimate of recoverable reserves at almost 4.0 trillion cubic feet of natural gas (AAPG, 2014) and gross gas production of 2.6 billion cubic feet per year (DOC, 2020). The field produces gas from 14 zones at depths between 2,000 and 12,000 feet. The Project wells will target nearly all of these zones (9 will be drilled to or through) based on depth of drill and nearby depletion.

The Solano County Zoning Code and Surface Mining Code (Solano County Code, Chapter 29) provides for the extraction of mineral resources in Solano County, the Sacramento County Special and Combining Zoning Districts (Sacramento County Zoning Code, Chapter 2) provides for the extraction of mineral resources in Sacramento County, and the Contra Costa Surface Mining and Reclamation Code (Contra Costa County Ordinance Code, Chapter 88-11) provides for the extraction of mineral resources in Contra Costa County.

The California Geological Survey (CGS) has classified regions of the state according to the presence or absence of significant concrete-grade aggregate deposits. The land classification is presented in the form of Mineral Resource Zones (MRZ). The portions of the Project area in Solano County and Contra Costa County are classified as MRZ-4, an area of no known mineral occurrences; the Project area in Sacramento County is classified as MRZ-1 where there is little likelihood for the presence of significant concrete aggregate (CGS, 2025). MRZ classifications apply only to construction-grade aggregate

resources and do not regulate or characterize hydrocarbon resources such as natural gas. Therefore, the MRZ-1 and MRZ-4 designations within the Project area do not affect or restrict natural gas extraction activities.

The Decker Island Sand and Gravel is the nearest active mining operation, located approximately 1.5 miles to the west of the Project site on Decker Island within Solano County (DOC, 2025b). The construction activities associated with the Project would increase vehicles and equipment on roads adjacent to the Project site, including SR-12 and SR-160. This increase in traffic would only last for the duration of Project activities and would not cause continued disruption to traffic or circulation patterns, access routes, or haul roads supporting the Decker Island operation; therefore, no major interference is anticipated.

5.12.2 Regulatory Setting

Federal, state, and local regulations, laws, and policies pertaining to mineral resources relevant to the Project are included below.

5.12.2.1 Federal

Surface Mining Control and Reclamation Act (SMCRA) (30 U.S.C. §§ 1201-1328). The federal SMCRA regulates surface mining and reclamation activities for coal and certain other mineral resources on federal lands. The Act ensures that surface mining operations are conducted in a manner that protects the environment and public safety.

5.12.2.2 State

Surface Mining and Reclamation Act (SMARA) (Pub. Resources Code §§ 2710-2796). SMARA was mandated in order to identify and protect mineral resources of statewide or regional significance and ensure that those resources are available when needed. SMARA requires the State Geologist to classify land into MRZs according to its known or inferred mineral potential. The primary goal of mineral land classification is to ensure that the mineral potential of land is recognized by local government decision makers and considered before land use decisions are made that could preclude mining.

5.12.2.3 Local

Contra Costa County General Plan (2024)

Chapter 7, Conservation Open Space and Working Lands Element

- **Goal COS-13:** Continued economic viability of mineral extraction operations while minimizing land use conflicts and environmental impacts.

5.12.3 Impact Analysis

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?

No Impact. The Project would produce a known mineral resource (i.e., natural gas) valuable to the region and the residents of the state. The Project would not conflict with or result in the loss of availability of any known mineral resource in the region. Therefore, the Project would have no impact.

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?

Less than Significant Impact. The Project site is located within the CalGEM administrative boundary for the Rio Vista Gas Field in Solano, Sacramento, and Contra Costa counties. The Project would continue the development of gas resources within the Rio Vista Gas Field. CalGEM designates recognized gas field areas as resource extraction areas. There are no other mineral resource recovery sites or known mineral resources in or near the Project area, and Project activities would not hinder access to nearby mineral resource extractions.

Therefore, implementation of the proposed Project would not result in the loss of a locally important mineral resource recovery site identified in a local general plan, specific plan or other land use plan. As a result, impacts would be less than significant.

5.12.4 Mitigation Measures

The Project would not result in significant impacts related to mineral resources; therefore, no mitigation is required.

5.13 NOISE

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

5.13.1 Environmental Setting

The proposed wells, well pads, access roads, and pipeline remediation areas will be situated within the existing gas field, which consists mainly of agricultural lands and is interspersed with access roads and gas field equipment/well pads, as well as wetlands and riparian or levee waterways. These areas already contain some access roads, gravel pads, and pipeline corridors interspersed throughout the Rio Vista Gas Field. The project spans three counties, Contra Costa, Sacramento, and Solano. Surrounding land uses include agricultural and industrial uses in support of gas wells. The nearest sensitive receptors to Project activities in each county are summarized in Table 5.13-1 below. The distances to nearest sensitive receptors were estimated by reviewing publicly available Contra Costa, Sacramento and Solano County databases, aerial photographs and city/county maps (Contra Costa County IT, 2025) (Sacramento County ODS, 2025) (Solano County GIS, 2025).

Table 5.13-1 Nearest Sensitive Receptors

County	Nearest Sensitive Receptor	Distance[14] (miles)	Direction from Work Location	Work Location
Contra Costa County	Residential	0.70	Southeast	Well Pad CC-1
Contra Costa County	Nearest School	5.24	South Southeast	Well Pad CC-2
Sacramento County	Residential	0.63	East Northeast	Well Pad SAC-SH-1
Sacramento County	Nearest School	1.48	West	Well Pad SAC-BR-3
Solano County	Residential 1	0.61	North	Well Pad Sol-2 Alt.
Solano County	Residential 2	0.61	Southwest	Well Pad Sol-3
Solano County	Nearest School	1.27	East	Well Pad Sol-3

Noise sources in the Project area include natural gas extraction equipment, maintenance vehicles associated with natural gas field operations, wind farm, agricultural equipment, and motor vehicle traffic on gas field roads and local highways and roads. Additionally, noise from commercial and recreational marine traffic noise on the Sacramento and San Joaquin Rivers may be noticeable. Per the Contra Costa County General Plan, National Transportation Noise Map, and Solano County General Plan highway noise contours the Project site locations within those counties are located outside of the 60 decibels (dB) roadway noise contours (Contra Costa County, 2025a) (Solano County, 2024b) (U.S. DOT, 2020).

According to the FAA Airport Data and Information Portal, the closest public use airport registered with the FAA is the public Rio Vista Municipal Airport located approximately 2 miles northeast of well pad SOL-1. The Solano County portion of the Project site is with the Airport Influence Area (AIA) of Rio Vista Municipal Airport, however, is located well outside the 55 dB Community Noise Level Equivalent (CNEL) 2035 noise contour (SCALUC, 2018). The nearest private airport (Walnut Grove Airport) is located approximately 7.5 miles to the Northeast of the well pad SAC-BR-1 (FAA, 2025).

[14] All distances are approximate based on estimations from aerial imagery.

Based on a review of the above referenced publicly available data, background ambient noise levels at the Project site are expected to range from 45 to 55 dB.

5.13.1.1 General Characteristics of Noise

Noise is generally defined as unwanted or objectionable sound. Measurement of sound involves determining three variables: 1) magnitude, 2) frequency, and 3) duration. Human ears respond to a very wide range of sound pressures that produce numbers of awkward size when sound pressures are related on an arithmetic (1, 2, 3…) scale. It is customary to express sound pressure level in dB, which are measures of logarithmic (1, 10, 100…) ratios comparing sound pressures to a reference pressure. The reference pressure commonly used in noise measurement is 20 microPascals (µPa or rms), which is considered to be the quietest sound a normal young adult human ear can hear in the frequency range that the ear is most sensitive to. This sound level is assigned the value 0 dB. Higher intensity sound is perceived as louder. Sound intensity is commonly measured on a weighted scale [dBA or db(A)] to correct for the relative frequency response of the human ear. The "A-weighted" noise level de-emphasizes low and very high frequencies of sound in a manner similar to the human ear's de-emphasis of these frequencies (Occupational Safety and Health Administration [OSHA], 2013; American Industrial Hygiene Association, 2022).

Except under special conditions, a change in sound level of 1 dB cannot be perceived. Outside of the laboratory, a 3 dB change is considered a just-noticeable difference, and a change in level of at least 5 dB is required before any noticeable change in community response would be expected. Some typical sound pressure levels for common sounds are provided in Table 5.13-2, below.

When evaluating potential noise impacts on nearby sensitive receptors (residential dwellings, transient lodging, hospitals, and other long-term care facilities, public or private educational facilities, libraries, churches, and places of public assembly), it is important to consider how sound levels decrease with increasing distance from the source. For a "point" source (such as construction within a fixed area) of sound in free space, the rate at which the sound attenuates is inversely proportional to the square of the distance from the source. This means the sound level would drop 6 dB each time the distance from the source is doubled. dB, measuring sound energy, combine logarithmically. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3 dB increase; the resultant sound level is the sound level from a single passing automobile plus 3 dB. When the difference between two sound levels is greater than about 10 dB, the lesser sound is negligible in terms of affecting the total level (OSHA, 2013).

Table 5.13-2. Common Sound Levels/Sources and Subjective Human Responses

Sound Level (dBA)	Typical Outdoor Noise Source	Typical Indoor Noise Sources	Typical Human Response/Effects
140	Carrier Jet takeoff (50 feet)	--	--Threshold for Pain--
130	Siren (100 feet) Live Rock Band	--	---Hearing Damage---
120	Jet takeoff (200 feet) Auto horn (3 feet)	--	--
110	Chain Saw Snow Mobile	--	---Deafening---
100	Lawn Mower (3 feet) Motorcycle (50 feet)	--	--
90	Heavy Duty Truck (50 feet)	Food Blender (3 feet)	---Very Loud---
80	Busy Urban Street, Daytime	Garbage Disposal (3 feet)	
70	Automobile (50 feet)	Vacuum Cleaner (9 feet)	---Loud---
60	Small plane at ¾ mi	Conversation (3 feet)	
50	Quiet Residential Daytime	Dishwasher Rinse (10 feet)	---Moderate---
40	Quiet Residential Nighttime	Quiet Home Indoors	---Quiet---
30	Slight Rustling of Leaves	Soft Whisper (15 feet)	---Very Quiet---
20	--	Broadcasting Studio	
10	--	Breathing	--Barely Audible--
0	--	--	--Threshold of Hearing--

Source: Source: AIHA 2003, and OSHA 2013

The duration of noise and the time period at which it occurs are important factors in determining the human response to sound. For example, noise induced hearing loss is directly related to the magnitude, frequency, and duration of exposure. Annoyance due to noise is also associated with how often noise is present and how long it persists. One approach to quantifying time-varying noise levels is to calculate the Energy Equivalent Sound Level (Leq) for the time period of interest. The Leq represents a sound level which, if continuous, would contain the same total acoustical energy as the actual time-varying noise which occurs during the observation period (OSHA, 2013).

In a residential or other noise sensitive environment, noise is more disturbing at night than during the day. Thus, noise indices have been developed to account

for the differences in intrusiveness between daytime and nighttime noise. The CNEL and the Day-Night Average Sound Level (Ldn) are such indices. CNEL and Ldn values result from the averaging of hourly Leq values for a 24-hour period, with a weighting factor applied to the nighttime Leq values (and the evening values for CNEL). The CNEL penalizes noise levels during the night (10:00 p.m. to 7:00 a.m.) by 10 dB to account for the increased sensitivity of people to noise after dark. Evening noise levels (7:00 p.m. to 10:00 p.m.) are penalized 5 dB by the CNEL. The Ldn also penalizes nighttime noise levels by 10 dB but does not penalize evening levels. These two indices are generally equivalent. In general, the CNEL may be thought of qualitatively as an accumulation of noise associated with individual events occurring throughout a 24-hour period. The noise of each individual event is accounted for in a separate, discrete measurement that integrates the changing sound level over time as, for example, when an aircraft approaches, flies overhead, then continues off into the distance. These integrated sound levels for individual operations are referred to as Equivalent Sound Level. The accumulation of the Equivalent Sound Levels from each individual operation during a 24-hour period determines the CNEL for the day.

5.13.1.2 Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in noise analysis.

- **Leq** represents an average of the sound energy occurring over a specified period. The 1-hour A-weighted equivalent sound level (Leq[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Percentile-Exceeded Sound Level (Lxx)** represents the sound level exceeded for a given percentage of a specified period (e.g., L10 is the sound level exceeded 10 percent of the time, L50 is the sound level exceeded 50 percent of the time, and L90 is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (Lmax)** is the highest instantaneous sound level measured during a specified period.
- **Ldn** is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.

- **CNEL** is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m., and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7:00 p.m. and 10:00 p.m.

Sound from a localized source, or point source,propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB each time the distance doubles from a point or stationary source. Roadways, highways, and moving trains (to some extent) consist of several localized noise sources on a defined path; these are treated as "line" sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each time the distance doubles from a line source.

5.13.1.3 Ground-borne Vibration

Unlike airborne noise, ground-borne vibration is generally considered a minor environmental concern (FTA, 2006). Vibrations from sources such as buses and trucks are typically imperceptible, even near major roadways. Common contributors to ground-borne vibration include trains, buses operating on rough surfaces, and construction activities such as blasting, pile driving, and the use of heavy earth-moving equipment.

Ground-borne vibration can cause detectable building floor movement, window rattling, items shaking on shelves or walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Human annoyance from vibration can often occur and can happen when the vibration exceeds the threshold of perception by only a small margin (refer to Table 5.13-3). A vibration level that causes annoyance would be well below the damage threshold for normal buildings (refer to Table 5.13-4).

Vibration is an oscillatory motion which can be described in terms of displacement, velocity, or acceleration. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring of blasting vibration since it is related to the stresses that buildings undergo.

Table 5.13-3. Vibration Annoyance Potential Criteria

Human Response	Continuous/Frequent Intermittent Sources PPV (in/sec)
Barely perceptible	0.01
Distinctly perceptible	0.04
Strongly perceptible	0.10
Severe	0.4

Source: California Department of Transportation (Caltrans), 2020

Table 5.13-4. Vibration Damage Potential Threshold Criteria

Structure and Condition	Continuous/Frequent Intermittent Sources PPV (in/sec)	Continuous/Frequent Intermittent Sources Vibration Velocity (VdB)
Extremely fragile historic buildings, ruins, ancient monuments	0.08	88
Fragile buildings	0.1	90
Historic and some old buildings	0.25	94
Older residential structures	0.3	98
New residential structures	0.5	102
Modern industrial/ commercial buildings	0.5	102

Source: Caltrans, 2020 and Federal Transit Administration (FTA), 2018

5.13.2 Regulatory Setting

Federal, state and local regulations, laws, and policies pertaining to noise that are relevant to the Project are included below.

5.13.2.1 Federal

Occupational Safety and Health Act (OSHA) (29 U.S.C. §§ 651–678). On-site noise levels are regulated by the OSHA. This regulation protects workers from the effects of occupational noise exposure. The noise exposure level of workers is regulated at 90 dBA over an 8-hour work shift to protect hearing (29 CFR 1910.95). Employee exposure to levels exceeding 85 dBA requires that employers develop a hearing conservation program. Such programs include adequate warning, the provision of hearing protection devices, and periodic employee testing for hearing loss.

California Occupational Safety and Health Administration (Cal/OSHA). Cal/OSHA is responsible for implementing and enforcing noise exposure limits established OSHA within the state.

5.13.2.2 Local

Contra Costa County General Plan

Noise Element

- **Policy HS-P14.5:** Protect noise-sensitive land uses from adverse noise impacts by requiring mitigation to the degree feasible for projects that would increase long-term noise in excess of the following thresholds, when measured at the sensitive use's property line:
    - Greater than 1.5 dBA DNL increase for ambient noise environments of 65 dBA DNL and higher.
    - Greater than 3 dBA DNL increase for ambient noise environments of 60 to 64 DNL.
    - Greater than 5 dBA DNL increase for ambient noise environments of less than 60 dBA DNL.
- **Policy HS-P14.7:** Condition entitlements to limit noise-generating construction activities to the following:
    - Weekdays and non-holidays unless site-specific conditions warrant exceptions.
    - Within 1,000 feet of noise-sensitive uses: 7:30 a.m. to 5:00 p.m.
    - Over 1,000 feet from noise-sensitive uses: 7:00 a.m. to 6:00 p.m.

- **Policy HS-P14.8:** Require a traffic noise analysis for development projects where the project would generate more than 40 percent of daily trips over existing average daily traffic (ADT) on impacted roadway segments. Projects below this threshold are assumed to have no significant traffic noise impact because they would increase noise levels by less than 1.5 dBA DNL, which is the most restrictive threshold for determining a significant traffic noise impact. This screening policy does not apply to projects involving a substantial number of new operational truck trips (e.g., warehouses).
- **Policy HS-P14.10:** Require new development to evaluate noise impacts on the natural environment, including impacts on wildlife, whenever appropriate.

The maximum allowable noise exposure by use in Contra Costa County is included in Table 5.13-5.

Table 5.13-5. Maximum Allowable Noise Exposure by Use Contra Costa County

Land Use	Noise Level[15] DNL
Residential	0 - 60
Urban Residential Infill	0 - 65
Hotels and Motels	0 - 65
Hospitals / Nursing Homes	0 - 65
Theaters / Auditoriums	0 - 65
Churches / Schools / Libraries	0 - 65
Office Buildings	0 - 65
Parks / Playgrounds	0 - 65
Industry	0 - 70

Source: Contra Costa County, 2024a

Sacramento County General Plan

Noise Element

- **Policy NO-6:** Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not to exceed the interior and exterior noise level

[15] Normally Acceptable Noise Levels. Specified land use is satisfactory based on the assumption that any buildings involved are of normal, conventional construction, without any special noise insulation requirements. New construction or developments that exceed these noise levels should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features have been included in the design.

standards indicated in Table 2 of the Sacramento County Noise Element (included as Table 5.13-6 of the IS/MND below) at existing noise sensitive areas in the project vicinity

- **Policy NO-7:** The "last use there" shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 3 standards at the property line of the generating use in anticipation of the future neighboring development.
- **Policy NO-8:** Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) (refer to section below) addresses construction noise within the County.

  Table 2 of the Sacramento County Noise Element (included as Table 5.13-6 of the IS/MND below) summarizes the non-transportation related noise standards for Sacramento County as described in the Sacramento General Plan

Table 5.13-6. Non-Transportation Noise Standards Sacramento County

Land Use	Outdoor Day Time L_{eq} / L_{Max}	Outdoor Nighttime L_{eq} / L_{Max}	Indoor Day and Nighttime L_{eq} / L_{Max}
Residential	55/75	50/70	35/55
Lodging	55/75	--	35/55
Hospitals / Nursing Homes	55/75	--	35/55
Theaters / Auditoriums	--	--	30/50
Churches / Schools / Libraries	55/75	--	35/60
Office Buildings	60/70	--	45/65
Parks / Playgrounds	65/75	--	45/65
Industry	60/80	--	50/70

Source: Sacramento County, 2022b.
Notes: The standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards above, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

Sacramento County Code. The Sacramento County Code Title 6 Health and Sanitation Section 6.68.090(e) indicates the following activities are exempt from noise standards:

- Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

Solano County General Plan

Public Health and Safety Chapter's, Noise Element

- **Policy HS.P-90:** Consider and promote land use compatibility between noise-sensitive and noise-generating land uses when reviewing new development proposals.
- **Implementation Program HS.I-67:** When reviewing new development proposals:
    - Require noise abatement measures to ensure that noise levels will not exceed those indicated in Table HS-5 of the Solano County Noise Element (included as Table 5.13-7 of the IS/MND below).
    - Require buffering between noise-sensitive land uses and noise sources unless a detailed noise analysis is conducted, and noise abatement measures can be taken to reduce noise to acceptable levels as shown on Table HS-5 of the Solano County Noise Element.
    - Require noise mitigation to reduce construction and other short-term noise impacts as a condition of approval for development projects by applying the performance standards outlined in Table HS-5 of the Solano County Noise Element. The total noise level resulting from new sources and ambient noise shall not exceed the standards in Table HS-5 of the Solano County Noise Element, as measured at outdoor activity areas of any affected noise sensitive land use except:

- If the ambient noise level exceeds the standard in Table HS-5 of the Solano County Noise Element, the standard becomes the ambient level plus 5 dB.
- Reduce the applicable standards in Table HS-5 of the Solano County Noise Element by 5 dB if they exceed the ambient level by 10 or more dB.
- Under the conditions outlined below, require acoustical studies to be prepared as part of the development review process to ensure adequate analysis of proposed development and incorporation of noise-reducing features in project designs. Acoustical studies with appropriate noise abatement measures will be required for all discretionary projects where any of the following conditions apply:
    - The project will cause future traffic volumes to exceed 5,000 average daily trips on any roadway that fronts residential, institutional, and open space land uses or will cause traffic volume to increase by 25 percent or more, on any of these roadways.
    - The project will introduce noise or vibration sources associated with mechanical equipment operations, entertainment, maintenance, and facility operations.

Table 5.13-7 below summarizes the non-transportation related noise standards for Solano County as described in Table HS-5 of the Solano County Noise Element.

Table 5.13-7. Non-Transportation Noise Standards, Solano County

Land Use	Outdoor Day Time L_{eq} / L_{Max}	Outdoor Nighttime L_{eq} / L_{Max}	Indoor Day and Nighttime L_{eq} / L_{Max}
Residential	55/75	50/65	35/55
Lodging	55/75	--	35/55
Hospitals / Nursing Homes	55/75	--	35/55
Theaters / Auditoriums	--	--	30/50
Churches / Schools / Libraries	55/75	--	35/60

Land Use	Outdoor Day Time L_{eq} / L_{Max}	Outdoor Nighttime L_{eq} / L_{Max}	Indoor Day and Nighttime L_{eq} / L_{Max}
Office Buildings	60/70	--	45/65
Parks / Playgrounds	65/75	--	45/65
Industry	60/80	--	50/70

Source: Solano County, 2024b.

5.13.3 Impact Analysis

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

Less than Significant Impact with Mitigation. The Federal Highway Administration's (FHWA) Roadway Construction Noise Model version 1.1 (RCNM) was used to estimate peak hour noise levels Leq and Lmax noise levels generated by Project construction and operational activities at the nearest residential receptors in each county to the Project area. Noise levels were predicted to assume a ground absorption coefficient of 0.5[16] and all equipment operates simultaneously, providing a conservative estimate. The predicted exterior construction noise levels at the nearest residence are summarized in Tables 5.13-8 through 5.13-10 below.

Table 5.13-8. Predicted Construction Exterior Noise Levels – Contra Costa County

Work Phase	Equipment	0.70 miles from Project (Nearest Residence) L_{max} dBA	0.70 miles from Project (Nearest Residence) L_{eq} dBA	5.23 miles from Project (Nearest School) L_{max} dBA	5.23 miles from Project (Nearest School) L_{eq} dBA
Well Pad Preparation, Access Roads and Pipeline	Backhoe	40.2	36.2	22.7	18.7

[16] A ground absorption coefficient of 0.5 represents ground conditions similar to a mixture of hard and soft surfaces.

Work Phase	Equipment	0.70 miles from Project (Nearest Residence) L_{max} dBA	0.70 miles from Project (Nearest Residence) L_{eq} dBA	5.23 miles from Project (Nearest School) L_{max} dBA	5.23 miles from Project (Nearest School) L_{eq} dBA
Well Pad Preparation, Access Roads and Pipeline	Truck	39.1	35.1	21.6	17.6
Well Pad Preparation, Access Roads and Pipeline	Excavator	43.3	39.4	25.9	21.9
Well Pad Preparation, Access Roads and Pipeline	Loader	41.7	37.8	24.3	20.3
Well Pad Preparation, Access Roads and Pipeline	Grader	47.6	43.6	30.1	26.2
Well Pad Preparation, Access Roads and Pipeline	Pickup Truck	37.6	33.6	20.1	16.2
Well Pad Preparation, Access Roads and Pipeline Equipment	**Well Pad Preparation Equipment Combined**	**47.6**	**46.8**	**30.1**	**29.3**
Drilling	Drill Rig	47.0	44.0	29.5	26.5
Drilling	Generator	43.3	40.2	25.8	22.8
Drilling	Generator	43.3	40.2	25.8	22.8
Drilling	Generator	43.3	40.2	25.8	22.8

Work Phase	Equipment	0.70 miles from Project (Nearest Residence) L_{max} dBA	0.70 miles from Project (Nearest Residence) L_{eq} dBA	5.23 miles from Project (Nearest School) L_{max} dBA	5.23 miles from Project (Nearest School) L_{eq} dBA
Drilling	Pickup Truck	37.6	33.6	20.1	16.2
Drilling	Pumps	43.6	40.6	26.1	23.1
Drilling	Vacuum Truck	47.9	43.9	30.4	26.5
Drilling	**Drilling Equipment Combined**	**47.9**	**49.8**	**30.4**	**32.3**
Well Site Completion	Backhoe	40.2	36.2	22.7	18.7
Well Site Completion	Crane	43.2	35.2	25.7	17.7
Well Site Completion	Drill Rig	41.8	34.8	24.3	17.3
Well Site Completion	Truck	39.1	35.1	21.6	17.6
Well Site Completion	Excavator	43.3	39.4	25.9	21.9
Well Site Completion	Loader	41.7	37.8	24.3	20.3
Well Site Completion	Pickup Truck	37.6	33.6	20.1	16.2
Well Site Completion	Pumps	43.6	40.6	26.1	23.1
Well Site Completion	**Well Site Completion Equipment Combined**	**43.6**	**45.9**	**26.1**	**28.4**

Table 5.13-9. Predicted Construction Exterior Noise Levels – Sacramento County

Work Phase	Equipment	0.63 miles from Project (Nearest Residence) L_{max} dBA	0.63 miles from Project (Nearest Residence) L_{eq} dBA	1.48 miles from Project (Nearest School) L_{max} dBA	1.48 miles from Project (Nearest School) L_{eq} dBA
Well Pad Preparation, Access Roads and Pipeline	Backhoe	41.1	37.1	33.7	29.7
Well Pad Preparation, Access Roads and Pipeline	Truck	40.0	36.0	32.6	28.6
Well Pad Preparation, Access Roads and Pipeline	Excavator	44.3	40.3	36.8	32.9
Well Pad Preparation, Access Roads and Pipeline	Loader	42.7	38.7	35.2	31.3
Well Pad Preparation, Access Roads and Pipeline	Grader	48.5	44.6	41.1	37.1
Well Pad Preparation, Access Roads and Pipeline	Pickup Truck	38.5	34.6	31.1	27.1
Well Pad Preparation, Access Roads and Pipeline	**Well Pad Preparation, Access Roads and Pipeline Equipment Combined**	**48.5**	**47.7**	**41.1**	**40.3**
Drilling Phase	Drill Rig	47.9	44.9	40.5	37.5
Drilling Phase	Generator	44.2	41.2	36.8	33.7
Drilling Phase	Generator	44.2	41.2	36.8	33.7

Work Phase	Equipment	0.63 miles from Project (Nearest Residence) L_{max} dBA	0.63 miles from Project (Nearest Residence) L_{eq} dBA	1.48 miles from Project (Nearest School) L_{max} dBA	1.48 miles from Project (Nearest School) L_{eq} dBA
Drilling Phase	Generator	44.2	41.2	36.8	33.7
Drilling Phase	Pickup Truck	38.5	34.6	31.1	27.1
Drilling Phase	Pumps	44.5	41.5	37.1	34.1
Drilling Phase	Vacuum Truck	48.8	44.9	41.4	37.4
Drilling Phase	**Drilling Phase Equipment Combined**	**48.8**	**50.7**	**41.4**	**43.3**
Well Site Completion	Backhoe	41.1	37.1	33.7	29.7
Well Site Completion	Crane	44.1	36.1	36.7	28.7
Well Site Completion	Drill Rig	42.7	35.7	35.3	28.3
Well Site Completion	Truck	40.0	36.0	32.6	28.6
Well Site Completion	Excavator	44.3	40.3	36.8	32.9
Well Site Completion	Loader	42.7	38.7	35.2	31.3
Well Site Completion	Pickup Truck	38.5	34.6	31.1	27.1
Well Site Completion	Pumps	44.5	41.5	37.1	34.1
Well Site Completion	**Well Site Completion Equipment Combined**	**44.5**	**46.8**	**37.1**	**39.4**

Table 5.13-10. Predicted Construction Exterior Noise Levels – Solano County

Work Phase	Equipment	0.61 miles from Project (Nearest Residence) L_{max} dBA	0.61 miles from Project (Nearest Residence) L_{eq} dBA	1.30 miles from Project (Nearest School) L_{max} dBA	1.30 miles from Project (Nearest School) L_{eq} dBA
Well Pad Preparation, Access Roads and Pipeline	Backhoe	41.4	37.4	35	31
Well Pad Preparation, Access Roads and Pipeline	Truck	40.3	36.3	33.9	29.9
Well Pad Preparation, Access Roads and Pipeline	Excavator	44.5	40.6	38.2	34.2
Well Pad Preparation, Access Roads and Pipeline	Loader	42.9	39.0	36.6	32.6
Well Pad Preparation, Access Roads and Pipeline	Grader	48.8	44.8	42.5	38.5
Well Pad Preparation, Access Roads and Pipeline	Pickup Truck	38.8	34.8	32.5	28.5
Well Pad Preparation, Access	**Well Pad Preparation, Access Roads**	**48.8**	**48.0**	**42.5**	**41.6**

Work Phase	Equipment	0.61 miles from Project (Nearest Residence) L_{max} dBA	0.61 miles from Project (Nearest Residence) L_{eq} dBA	1.30 miles from Project (Nearest School) L_{max} dBA	1.30 miles from Project (Nearest School) L_{eq} dBA
Roads and Pipeline	**and Pipeline Equipment Combined**				
Drilling	Drill Rig	48.2	45.2	41.9	38.8
Drilling	Generator	44.4	41.4	38.1	35.1
Drilling	Generator	44.4	41.4	38.1	35.1
Drilling	Generator	44.4	41.4	38.1	35.1
Drilling	Pickup Truck	38.8	34.8	32.5	28.5
Drilling	Pumps	44.8	41.7	38.4	35.4
Drilling	Vacuum Truck	49.1	45.1	42.8	38.8
Drilling	**Drilling Equipment Combined**	**49.1**	**51.0**	**42.8**	**44.6**
Well Site Completion	Backhoe	41.4	37.4	35.0	31.0
Well Site Completion	Crane	44.4	36.4	38.0	30.0
Well Site Completion	Drill Rig	43.0	36.0	36.6	29.6
Well Site Completion	Truck	40.3	36.3	33.9	29.9
Well Site Completion	Excavator	44.5	40.6	38.2	34.2
Well Site Completion	Loader	42.9	39	36.6	32.6
Well Site Completion	Pickup Truck	38.8	34.8	32.5	28.5
Well Site Completion	Pumps	44.8	41.7	38.4	35.4
Well Site Completion	**Well Site Completion Equipment Combined**	**44.8**	**47.4**	**38.4**	**40.7**

Noise levels from construction activities in Contra Costa County are not expected to exceed residential daytime or nighttime Lmax or Leq noise standards listed in Table 5.13-5 at the nearest sensitive receptors.

Noise levels at the nearest sensitive receptor associated with drilling activities during the construction phase of the Project are expected to slightly exceed the residential nighttime Leq noise standards in both Sacramento County and Solano County. However, daytime residential noise standards were not exceeded. Noise levels associated with the Well Pad Preparation, Access Roads and Pipeline Phase, and Well Completion Phase were not predicted to exceed the applicable residential Lmax or Leq noise standards during either daytime or nighttime periods in Sacramento County or Solano County.

Impulse noise, such as metal-on-metal sounds from pipe clangs or contact with the drill rig floor, pipe rack, or V-door will be generated throughout drilling activities. At the source, these metal-on-metal impacts can produce noise levels up to 100 dBA, which exceed the levels generated by typical construction equipment and the drilling rig described above. However, due to the distance range of approximately 0.61 miles and 0.70 miles between the Project area and the nearest sensitive receptors, the attenuated noise level at the receptors is estimated to range from approximately 39 dBA to 40 dBA. This noise level would not exceed the daytime or nighttime residential noise standards in any of the three counties.

Based on the analysis, construction noise levels during the drilling phase are expected to slightly exceed nighttime noise standards in Solano and Contra Costa counties. As a result, the impact at the nearest sensitive receptors could be significant. However, these elevated noise levels would be temporary, and implementation of **MM NOISE-1** would reduce impacts to less than significant.

MM NOISE-1: Construction Equipment Noise Monitoring. During drilling activities, Project personnel shall implement initial noise monitoring at the Project area's nearest Project boundary during active nighttime drilling activities. If measured noise levels exceed 50 dBA, CRPC shall implement the following measures to reduce noise generated by construction activities to a level less than 50 dB:

- Installation of temporary noise barriers or sound walls.
- Installation of sound-attenuating enclosers around the shaker.
- Installation of exhaust silencers on generators; and
- Installation of acoustical blankets around portions of the drill rig mast to mitigate noise from the top drive.

Noise associated with Project operational activities would be generated primarily from the twelve unshielded compressors used to boost the produced natural gas. The predicted exterior noise levels at the nearest receptor for the

compressors during Project operations are approximately 43.8 dBA Leq and Lmax. No mitigation measures to reduce operational noise levels are necessary.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Construction would result in temporary ground vibration. Ground vibrations generated by construction equipment spread through the ground and decrease in intensity with increasing distance from the source. Construction activities most likely to cause vibrations include heavy construction equipment and drilling rigs. The nearest sensitive receptors are located at distances ranging from approximately 0.61 miles to 0.70 miles from construction activities; thus, receptors would not perceive vibration or groundborne noise during construction. Operation of the proposed Project would not result in vibrations perceptible to nearby receptors. As such, impacts would be less than significant.

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?

No Impact. The nearest private airport (Walnut Grove Airport) is located approximately 7.5 miles to the Northeast of the well pad SAC-BR-1. The nearest public airport (Rio Vista Municipal Airport) is located approximately 2 miles to the Northeast of well pad SOL-1. The Solano County portion of the Project site is with the AIA of Rio Vista Municipal Airport, however, is located well outside the 55 dB CNEL 2035 noise contour (SCALUC, 2018). Aviation noise is not expected to adversely affect the Project site.

5.13.4 Mitigation Measures

Implementation of the following measures would reduce noise impacts to less than significant as a result of the proposed Project:

- MM NOISE-1: Construction Equipment Noise Monitoring

5.14 POPULATION AND HOUSING

POPULATION AND HOUSING – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

5.14.1 Environmental Setting

According to the U.S. Census Bureau, Solano County had a population of 453,491, Sacramento County had a population of 1,585,055, and Contra Costa County had a population of 1,165,927 in 2020 (U.S. Census Bureau, 2020a, 2020b, 2020c).

According to current data and projections from the California Department of Finance, Solano County experienced population decline between 2020 and 2024, from 452,747 to 447,028, but is projected to grow to 541,256 by the year 2070. Sacramento County also experienced population decline between 2020 and 2024, from 1,586,154 to 1,583,935, but is projected to grow to 2,051,717 by the year 2070. Contra Costa County also experienced population decline between 2020 and 2024, from 1,165,866 to 1,148,745, but is projected to grow to 1,545,680 by the year 2070 (California Department of Finance, 2025).

5.14.2 Regulatory Setting

There are no federal or state laws, regulations, or policies pertaining to population and housing that are relevant to the Project. In addition, there are no policies within the Solano County General Plan, Sacramento County General Plan, or Contra Costa General Plan pertaining to population and housing that are relevant to the Project.

5.14.3 Impact Analysis

a) Induce substantial 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)?

Less Than Significant Impact. The Project consists of constructing 83 new gas wells along with associated equipment, facilities, and infrastructure within the Rio Vista Gas Field, which consists primarily of open space and agriculturally developed areas. As discussed in Section 5.11, Land Use and Planning, the Project area is located within portions of Solano, Sacramento, and Contra Costa counties, which have zoned the Project areas as Grazing Land and Urban Built Up Land, Agricultural Crop Land, and Agricultural Lands; all of which allow for concurrent oil and gas development (Contra Costa County 2024; Sacramento County, 2022 and 2017; Solano County 2008). While the Project does create opportunity for the increased production of natural gas, the new gas wells would tie-in to the existing gas pipeline system and would not extend natural gas access to new areas. Therefore, the Project would not encourage substantial population growth by increasing access to natural gas in new areas.

Construction of new gas wells and well pads will occur on existing well pads within the Rio Vista Field to the extent feasible. Existing access roads will be used as much as possible during Project activities; however, new access roads will need to be established where required to reach new well pad locations during site preparation. These new access roads will establish private access to the well pads and are not intended for public use, therefore would not substantially induce population growth. Project impacts to population growth as a result of direct or indirect impacts would be less than significant.

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

Less than Significant Impact. The proposed Project would be located primarily within an agricultural and wetlands area of the Rio Vista Gas Field. There are no residences on the Project site; therefore, the proposed Project would not result in a displacement of existing housing, nor would it necessitate the construction of replacement housing. Construction of the proposed Project would be supervised by existing CRPC personnel, and may require up to 10 additional personnel, over a period of approximately 6.8 years, the estimated duration of Project construction.

Although construction workers from the existing local workforce would be utilized to the extent feasible, construction workers and other field personnel involved with the Project may slightly increase the demand for temporary housing (hotels or rental housing). However, the housing demand would be temporary based on the construction schedule and limited to the small number of required personnel within each Project County. Once construction is complete and the Project is in its operational phase, only routine inspections in support of operations utilizing the existing Rio Vista Gas Field crew would occur. Neither the construction phase nor the operational phase of the Project would

induce substantial population growth in the area. Therefore, impacts would be less than significant.

5.14.4 Mitigation Measures

The Project would not result in significant impacts on population and housing; therefore, no mitigation is required.

5.15 PUBLIC SERVICES

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

5.15.1 Environmental Setting

The Project site is located in unincorporated Solano, Sacramento, and Contra Costa counties, within open space and agricultural areas with minimal community services, in that there are no nearby fire stations, police stations, or other governmental facilities within or directly adjacent to the Project site. The nearest incorporated city is Rio Vista, located approximately 0.8 miles east of the SOL-3 well pad in Solano County. The nearest public services within each county from the Project area are summarized in Table 5.15-1 and further discussed below.

Table 5.15-1. Summary of Closest Public Service Providers to Project Area Per County

Service	Solano County Providers	Sacramento County Providers	Contra Costa County Providers
Fire Protection	Montezuma Fire Protection District Station 51	Delta Fire Protection District	Project Area Out of District
Police Protection	Solano County Sheriff's Office	Sacramento County Sheriff's Office	Contra Costa County Office of the Sheriff
Schools	Rio Vista Highschool	Isleton Elementary	Vintage Parkway Elementary
Parks	Sandy Beach County Park	Brannan Island State Recreation Area	Franks Tract State Recreation Area

5.15.1.1 Fire Protection

The Project area is located within the Rio Vista Gas Field which spans a portion of the Sacramento-San Joaquin River Delta and the eastern Montezuma Hills and is mainly comprised of undeveloped agricultural fields and wetlands. A portion of the proposed gas well pads will be constructed on undeveloped areas which will require clearing of vegetation. The Project area is categorized by CAL FIRE as a LRA, which is not in a State Responsibility Area, and therefore fire risk is not recorded in this area on Fire Hazard Severity Zone Mapper (CAL FIRE 2025, 2023). Fire protection services vary by county; however, an automatic mutual aid agreement exists between fire districts in the Sacramento-San Joaquin Delta region, including those in Solano and Sacramento counties (City of Isleton, 2025). Therefore, emergency response within the Project area is primarily determined by staffing and availability rather than jurisdictional boundaries, as mutual aid agreements allow the closest available fire units to respond regardless of the county or district of origin.

Solano County

The Montezuma Fire Protection District (MFPD) provides fire protection to approximately 300 square miles of farmland and pastures within Solano County which includes a portion of the Project area (Solano LAFCO 2020). The MFPD operates out of two stations, 51 and 52, with a majority of personnel being volunteers. The mission of the MFPD is to provide fire protection, rescue and emergency medical assistance to the community and its visitors in the most professional, courteous, and efficient manner possible (MFPD 2025). The nearest fire protection station to the Project area is MFPD Station 51, located approximately 1.5 miles northeast from the Solano County portion of the Project area.

Sacramento County

The Delta Fire Protection District (DFPD) is one out of eleven fire districts that offer protection in Sacramento County (DFPD, 2008). The DFPD provides coverage to the southern tip of Sacramento County, including Sherman Island, and sections of Brannan and Twitchell Islands. The DFPD contracts to the Rio Vista Fire Department for all services consisting of paramedics, fire and rescue services, and prevention services and obtains an ISO rating of 8b/10, where lower numbers indicate better fire protection capability and higher numbers reflect limited-service availability in rural or difficult-to-access areas (DFPD, 2025). The nearest DFPD station to the Project area is the Rio Vista Fire Department Station 55 that is located approximately 1.5 miles west from the Sacramento County portion of the Project area.

Contra Costa County

The Project area within Contra Costa County is located on Bradford Island. Bradford Island is only accessible by boat and in 2020 reported a population of 48 residents (Bradford Island Reclamation District 2059, 2020). Bradford Island is not within the jurisdiction of any fire protection district. East Contra Costa Fire Protection District, the closest fire protection district, has historically responded to fire emergencies in the area, but only when lives are in danger with limited services to evacuate residents (Contra Costa County, 2024a; East Bay Times, 2016a). Efforts to contain fires on Bradford Islands have been executed primarily by residents and the Contra Costa County Sheriff's Department (East Bay Times, 2016b). The East Contra Costa Fire District was absorbed into the Contra Costa County Fire Protection District (CCCFPD) in 2022 (Contra Costa News, 2023). The nearest CCCFPD station, Station 95, is approximately 6.25 miles south of the Contra Costa County portion of the Project Area.

5.15.1.2 Police Protection

Solano County

Police services are provided to the Solano County portion of the Project area by the Solano County Sheriff's Office. The Sheriff's Office is located on Union Avenue in Fairfield, California, approximately 17 miles from the Solano County portion of the Project site.

Sacramento County

Law enforcement is provided to the Sacramento County portion of the Project area by the Sacramento County Sheriff's Office. The nearest Sheriff's Office is located approximately 25.75 miles from the Sacramento County portion of the Project area.

Contra Costa County

The Contra Costa County Office of the Sheriff provides law enforcement to unincorporated Contra Costa County, including the portion of the Project area on Bradford Island. Bradford Island is only accessible by boat, which may increase response times for law enforcement and other emergency services. The Sheriff's Office is located approximately 24 miles from the Contra Costa County portion of the Project area.

5.15.1.3 Schools

Solano County

The nearest school to the Project area in Solano County is Rio Vista High School located at 410 South 4th Street, Rio Vista, CA 94571, approximately 1.3 miles northeast of the Project area within Solano County.

Sacramento County

Within Sacramento County, the nearest school to the Project area is Isleton Elementary located at 412 Union Street, Isleton, CA 95621, approximately 2.6 miles east of the Project area.

Contra Costa County

The nearest school to the Project area within Contra Costa County is Vintage Parkway Elementary School located at 1000 Vintage Parkway, Oakley, CA 94561, approximately 6 miles southwest of the Project area within Contra Costa County.

5.15.1.4 Parks

Solano County

The nearest park to the Project area within Solano County is Sandy Beach County Park and Campground located on the Sacramento River, just south of Rio Vista, approximately 1 mile northeast of the Solano County portion of the Project area. Sandy Beach Park offers campsites, picnic grounds, a beach volleyball court, and a boat-launch (Solano County, 2025).

Sacramento County

The nearest park to the Project area within Sacramento County is Brannan Island State Recreation Area located beside the Sacramento River and Three Mile Slough, approximately 1.3 miles west of the Sacramento County portion of the Project area. Brannan Island State Recreation Area offers campsites, picnicking, swimming, and boat launches (California State Parks, 2025a).

Contra Costa County

The nearest park to the Project area within Contra Costa County is Franks Tract State Recreation Area located southeast of Brannan Island between False River and Bethel Island, approximately 2 miles south of the Contra Costa portion of the Project area. Franks Tract State Recreation Area is only accessible by boat and primarily offers recreation for anglers and waterfowl hunters (California State Parks, 2025b).

5.15.2 Regulatory Setting

There are no federal or state laws, regulations, or policies pertaining to public services that are relevant to the Project. Local regulations, laws, and policies pertaining to public services relevant to the Project are included below.

5.15.2.1 Local

Contra Costa County General Plan (2024)

Chapter 8: Public Facilities and Services Element

- **Policy PFS-P6.1:** Require new development to support effective law enforcement and fire protection by providing a safe and accessible public realm for all.
- **Policy PFS-P6.3:** During the discretionary review process for projects with potential to increase demand on fire protection services, consult with the applicable fire district to identify any upgrades to fire protection facilities, infrastructure, and equipment needed to reduce fire risk and improve emergency response.

5.15.3 Impact Analysis

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?

(i) Fire Protection. Less than Significant Impact. The proposed Project would involve the construction and operation of 83 gas wells and associated equipment, facilities, and infrastructure within the existing Rio Vista Gas Field. The number of vehicles accessing the site would temporarily increase during Project construction, then return to baseline levels during Project operation. The proposed wells would be located on gravel pads that are kept clear of vegetation. Pipelines would be underground. All vehicles and equipment operating on-site would adhere to CCR Title 14 as well as California Public Resource Code Section 4291 which requires a defensible space of at least 100 feet around each structure that is cleared of vegetation, the removal of at least 10 feet of flammable material around all equipment and requires all applicable equipment to have spark arresters.

A mutual aid agreement exists between local fire districts in Solano and Sacramento counties to ensure adequate fire response and applies to the Project area located in these counties. For the Contra Costa County portion of the Project area on Bradford Island, no fire district has full jurisdictional responsibility; however, the Contra Costa Fire Protection District may provide limited life-safety response when available. The Contra Costa County General Plan Policy PFS-P6.3 requires consultation with the applicable fire district during discretionary review for projects that could increase demand for fire protection services. However, because there is no fire district covering Bradford Island, there is no applicable fire protection district with jurisdiction over this portion of the Project to which Contra Costa County General Plan Policy PFS-P6.3's consultation provision would apply.

The proposed Project would not require the provision of new or physically altered governmental fire protection facilities. Therefore, impacts to fire protection are anticipated to be less than significant.

(ii) Police protection; (iii) Schools; (iv) Parks; and (v) Other public facilities. No Impact. The proposed Project would include the construction and operation of 83 gas wells and associated equipment, facilities, and infrastructure within the existing Rio Vista Gas Field. The Project does not involve the construction of any residences, buildings, or other land uses requiring public services. As discussed within Section 5.14, Population and Housing, the proposed Project would not

result in population growth. Construction activities would occur within an active natural gas field where CRPC already operates and maintains wells, access roads, and a pipeline network (Section 2.2). These areas have established safety protocols, onsite supervision, and existing emergency response procedures that apply to both construction and routine operational activities. Work associated this Project would be performed within controlled work zones, consistent with CRPC's ongoing field operations. As a result, construction would not substantially elevate the risk of accidents requiring fire, law enforcement, or emergency medical response beyond existing conditions. The Project would not generate a need for any new government facilities or public services during or after proposed activities are completed.

During construction, the Project area would be secured and monitored to prevent vandalism or theft. Drilling operations would be conducted 24 hours a day, so personnel would be present to prevent vandalism or theft. Pipeline installation, well site preparation, and other surface work would be conducted during daylight hours; however, access is restricted to the public due to the wells or pipelines being located on privately owned land.

Therefore, the Project would have no impact on schools, parks, or other public facilities.

5.15.4 Mitigation Measures

The Project would have a less than significant impact to public services; therefore, no mitigation is required.

5.16 RECREATION

RECREATION	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

5.16.1 Environmental Setting

The Project area is located within the existing Rio Vista Gas Field that spans Solano, Sacramento, and Contra Costa counties, on property that is primarily utilized as part of the existing gas field or for agricultural purposes. The existing gas field sites and agricultural areas are located on private properties and are restricted from public access. The Sacramento and San Joaquin Rivers run adjacent to the proposed wells on Brannon, Sherman, Twitchell, and Bradford Islands, and offer a variety of aquatic recreation opportunities, including motorized and non-motorized (e.g., kayaking, canoeing) boating, fishing, swimming, and boat-in camping. The nearest recreational facilities are Sandy Beach County Park and Campground located approximately 1 mile northeast of the Solano County portion of the Project area and Brannan Island State Recreation Area located approximately 0.75 miles west of the Sacramento County portion of the Project area. Both facilities offer campsites, picnicking, and boat launches (California State Parks 2025a; Solano County 2025b). The nearest recreational facility in Contra Costa County is Franks Tract State Recreation Area, located approximately 2 miles south of the Contra Costa County portion of the Project area. Franks Tract is a flooded wetland area accessible only by water, with no land-based entry, and is primarily used for boating and fishing. The nearest hiking trail to the Project area is the Brannan Island Trail Loop, a 3-mile loop located approximately 0.9 miles from the Sacramento County portion of the Project.

5.16.2 Regulatory Setting

There are no federal, state or local laws, regulations, or policies pertaining to recreation that are relevant to the Project because the Project would not involve any changes to baseline conditions that relate to recreational opportunities or the use of recreational facilities within Solano, Sacramento, or Contra Costa counties.

5.16.3 Impact Analysis

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

No Impact. The deterioration of neighborhood and regional parks or other facilities is often accelerated by increased use due to population growth. As discussed within Section 5.14, Population and Housing, the proposed Project would not cause population growth in the area. Therefore, there would be no impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed Project does not include recreational facilities, nor will it require the construction or expansion of recreational facilities. As discussed within Section 5.14, Population and Housing, the proposed Project would not result in population increases within the area, so there would be no increased demand for recreational facilities. Therefore, there would be no impact.

5.16.4 Mitigation Measures

The Project would not result in significant impacts on recreational facilities; therefore, no mitigation is required.

5.17 TRANSPORTATION

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

5.17.1 Environmental Setting

The Project area (southern portion of the Rio Vista Gas Field) is located south of State Route (SR) 12, and near the City of Rio Vista. SR 12 provides regional east-west access as it connects Interstate Highway 5 to Interstate Highway 80. Within the Project area, SR 12 experiences annual average daily traffic of 21,100-22,700 vehicles per day (Caltrans, 2023).

Well pads in Solano County would be accessed from SR 12 using existing rural roads, including Azevedo Road, Amerada Road, Emigh Road and Montezuma Hills Road. Well pads in Sacramento County would be accessed from SR 12 and SR 160 using existing rural roads, including Tomato Slough Road, Flatlands Line Road and West Brannan Island Road. The well pad in Contra Costa County would be accessed from SR 4 using existing roads, including Laurel Road (Oakley), Main Street, Cypress Road, Jersey Island Road to the Bradford Island Ferry West Landing. The existing ferry (or project-specific barge) would transport workers, equipment and materials to the well pad on Bradford Island. A summary of characteristics for roadways anticipated to be utilized for access during Project activities is provided is Table 5.17-1.

Table 5.17-1. Characteristics of Roadways to be Used for Project Access

Road Name	County	Total No. of lanes	Road Surface Material	Maintenance Jurisdiction
State Route 12	Solano	2*	Paved	Caltrans
Azevedo Road	Solano	2	Paved	County of Solano
Amerada Road	Solano	2	Paved	County of Solano
Emigh Road	Solano	2	Paved	County of Solano
Montezuma Hills Road	Solano	2	Paved	County of Solano
State Route 12	Sacramento	2	Paved	Caltrans
State Route 160	Sacramento	2	Paved	Caltrans
Tomato Slough Road	Sacramento	2	Dirt	County of Sacramento
Flatlands Line Road	Sacramento	2	Dirt	County of Sacramento
West Brannan Island Road	Sacramento	2	Paved	County of Sacramento
State Route 4	Contra Costa	4	Paved	Caltrans
Laurel Road	Contra Costa	4	Paved	City of Oakley
Main Street	Contra Costa	4	Paved	City of Oakley
Cypress Road	Contra Costa	2	Paved	City of Oakley
Jersey Island Road	Contra Costa	2	Paved	County of Contra Costa

* Portions of SR-12 near Suisun City in Solano County are currently being improved (Caltrans, 2026). However, SR-12 remains primarily a 2-lane rural highway.

5.17.2 Regulatory Setting

The following existing federal, state and local policies are applicable to the Project.

5.17.2.1 Federal

There are no major federal laws, regulations, or policies potentially applicable to this Project related to transportation. The following state and local policies pertaining to transportation are applicable to the Project.

5.17.2.2 State

Senate Bill 743 (Pub. Resources Code § 21099). SB 743, signed in 2013, changes the way transportation studies are conducted in CEQA documents. Vehicle miles traveled (VMT) replaces motorist delay and level of service (LOS) as the metric for impact determination. For land development projects, VMT is simply the product of the daily trips generated by a new development and the distance those trips travel to their destinations. For capital projects, impacts are identified as the new VMT attributable to the added capital project, both from the installation of the facility and the induced growth generated as a result of new land uses.

In January 2019, the Natural Resources Agency and the California Governor's Office of Planning and Research (OPR) codified SB 743 into the PRC and the State CEQA Guidelines. In addition, OPR provided technical guidance for the implementation of SB 743, which determined that projects that generate or attract fewer than 110 passenger vehicle trips per day generally may be assumed to cause a less-than significant transportation impact (OPR, 2018).

California Department of Transportation Regulations. The California Department of Transportation (Caltrans) has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on California highways. The following Caltrans regulations may apply to the Project:

- California Vehicle Code, Division 15, Chapters 1 through 5 (Size, Weight, and Load). Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; and
- California Street and Highway Code, Sections 660-711, 670-695. Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.

These state regulations would relate to the haul of heavy equipment and materials to the Project area during construction. Trucking companies and the proposed Project must comply with these regulations.

5.17.2.3 Local

CEQA Guidelines Section 15064.3(b) indicates that VMT is the most appropriate measure for transportation impacts. Solano County and Contra Costa County have adopted VMT thresholds consistent with guidance provided by OPR. The Sacramento County threshold of significance for the transportation impacts of small projects is 237 average new daily trips.

5.17.3 Impact Analysis

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

No Impact. The Project will not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, or pedestrian facilities. The proposed well pads, access road and pipeline alignments are located in rural areas and are not served by mass transit, or pedestrian or bicycle routes.

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

Less Than Significant Impact. Based on the proposed implementation schedule and manpower requirements for the Project, the drilling phase is expected to generate the highest peak vehicle trips, with up to 28 round trips per day, which is the estimate used in the emissions calculations for the Project (refer to Section 5.3) Since this does not exceed the ADT threshold for the affected counties, the Project's VMT impact would be less than significant.

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

No Impact. Project activities would not involve any roadway modifications or incompatible uses that would increase traffic hazards. Additionally, all heavy truck traffic associated with the Project would be required to meet Caltrans regulations regarding maximum load limits and safety requirements. Therefore, there would be no impact.

d) Result in inadequate emergency access?

No Impact. The proposed project would not result in any change in land use or roadway or lane closures that could affect emergency access to nearby land uses. Emergency access to existing wells would not be affected. A mutual aid agreement exists between local fire districts in Solano and Sacramento counties to ensure adequate fire response and applies to the Project area located in

these counties. For the Contra Costa County portion of the Project area on Bradford Island, no fire district has full jurisdictional responsibility; however, the East Contra Costa Fire Protection District may provide limited life-safety response when available.

5.17.4 Mitigation Measures

The Project would not result in significant impacts to transportation; therefore, no mitigation is required.

5.18 TRIBAL CULTURAL RESOURCES

TRIBAL CULTURAL RESOURCES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code § 5020.1(k), or 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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐ ☐	☒ ☒	☐ ☐	☐ ☐

5.18.1 Environmental Setting

5.18.1.1 Ethnographic Context

The Project site is located within territory traditionally associated with the Eastern Miwok (Kroeber, 1925). The Eastern Miwok historically occupied the area from present Walnut Creek in Contra Costa County and the Delta, along the lower Mokelumne and Cosumnes Rivers and along the Sacramento River from present Rio Vista to Freeport, the foothill and mountain areas of the upper Mokelumne River and Calaveras River watersheds, the upper Stanislaus River and Tuolumne River watersheds, and the upper Merced River and Chowchilla River watersheds (Levy, 1978; Shipley, 1978). These areas have been home to the many cultures and bands of the Eastern Miwok people for thousands of years. Within this territory, both sides of the Sacramento River, from approximately 5 miles south of its confluence with the American River, downstream to Rio Vista, were occupied by the Plains Miwok (Bennyhoff, 1977).

The project area also overlaps with the Patwin ethnographic territory. The Patwin are the southernmost members of a group of Native American cultures (i.e., Wintu, Nomlaki, and Patwin) that share a related set of languages. The Native American citizens of Yocha Dehe Wintun Nation identify themselves as Patwin people of the Wintun linguistic group. The Patwin traditionally occupied the southwestern portion of the Sacramento Valley, from the lower hills of the eastern North Coast Ranges to the Sacramento River, and from approximately Princeton south to the San Pablo and Suisun Bays (Kroeber 1925, 1932). The Montezuma Hills, which lie within the project area, were not the sole domain of any one group and were used by several Native American groups in recent prehistory and the historic period. It is believed that the Southeastern Patwin, the Plains Miwok, and the Bay Miwok all used the Montezuma Hills and the surrounding regions (Levy, 1978; Johnson 1978).

Farther west, outside of the project area, the broader Central California region along the San Francisco Bay and adjacent valleys, were historically inhabited by the Costanoan (Ohlone) peoples. Costanoan communities were located near coastal terraces, creek and river valleys, and estuarine environments, including parts of the Delta, where abundant fish, shellfish, waterfowl, and plant resources supported long-term occupation. Archaeological evidence in the region includes shell middens, village sites, and artifact scatters (Kroeber 1925).

These bands and communities, including the Bay, Plains, Northern Sierra, Central Sierra, and Southern Sierra Miwok were diverse and thriving throughout time until the Spanish invasion and establishment of the mission system. Miwok peoples, for example, were organized through political and kinship-based communities and villages, each exercising governance over their territories. These governance structures were regionally specific rather than under one authority. Miwok peoples were organized as autonomous tribal communities and villages, and

each occupied and maintained distinct boundaries that were generally recognized and respected by neighboring communities and villages (Bennyhoff, 1977).

Within each community, there were lineages and settlements between 20 and 300 persons with the larger villages along the rivers and San Francisco Bay (Garlignhouse et al., 2017). Within the Rio Vista area, two such Miwok communities have been documented. Anizumne, a community of approximately 250 individuals, was likely located approximately 1 mile north of the present-day City of Rio Vista. Ompin, was located south of Rio Vista, and contained a smaller population than Anizumne.

Prior to western colonization, the Miwok territory encompassed a wide range of environments, some rich enough to support permanent villages, others less abundant and necessitating a more mobile way of life. Miwok subsistence practices were based primarily on hunting, fishing, and gathering wild plant foods. Aside from tobacco, they did not cultivate plants or, aside from the dog, domesticate animals (Levy, 1978). Subsistence was primarily focused on gathering wild plant foods such as acorn (*Quercus* spp.), buckeye (*Aesculus californica*), hazelnut (*Corylus cornuta* var. *californica*), nuts from the gray pine (*Pinus sabiniana*), and bulbs from various types of Brodiaea, all of which would be supplemented by meat from large mammals such as mule deer (*Odocoileus hemionus*), tule elk (*Cervus nannodes*), and pronghorn antelope (*Antilocarpa americana*). Other important food sources, particularly for the Plains Miwok, included freshwater fish such as lampreys and sturgeon and game birds such as quail and various species of waterfowl. Salmon was preeminent among the Eastern Miwok, with trout holding a similar preeminence for those living in the mountains. Fishing was accomplished through a variety of techniques that included cast netting, drag nets towed behind tule rafts, stationary nets placed across narrow waterways and, for larger species such as salmon, harpooning and spearing. The Bay Miwok, in particular, used milkweed (*Asclepias* spp.), California fremontia (*Fremontodendron californicum*), and Indian hemp (*Apocynum cannabinum*) in net-making for fishing activities (Levy, 1978). Freshwater clams, mussel, and land snail were also gathered from riverine environments (Levy, 1978).

The Miwok primarily used the bow and arrow for both large game hunting and warfare. Bows were generally sinew-backed, and large-game hunting arrows would often feature a detachable foreshaft that would remain in the prey even if the main shaft were broken or removed (Aginsky, 1943). Miwok inhabiting lower elevations would select wood from ash (*Fraxinus latifolia*), oak (*Quercus* spp.), willow (*Salix* spp.), pepperwood, maple, and hazel to construct their arrow shafts (Aginsky, 1943; Levy, 1978).

Miwok basketry could be either twined or coiled, with the twined variety consisting of seed beaters, burden baskets, cradles, and netted rackets used in a lacrosse-like, women-only ball game called a'mta, ama'tup, or sakumship (Barrett and Gifford, 1933). The coiled technique was often employed for crafting winnowing trays (a flat, woven tray used for separating grain from chaff), parching baskets, and various types of truncated conical baskets (Levy, 1978). Other Miwok textiles included tule mats, which were used extensively by the Plains Miwok.

The Eastern Miwok made several distinct types of dwellings. The Bay Miwok utilized a thatched structure, which used poles to form an inner, conical frame, over which was arranged thatching of brush, grass, or tule (Levy, 1978). Other Miwok structures included assembly houses which were 40 to 50 feet in diameter, semisubterranean, and used for social and ritual community gatherings; a smaller circular structure composed of brush that would be used for mourning ceremonies held during the summer months; and conical sweathouses, which ranged from 6 to 15 feet in diameter and were built over a pit that was 2 to 3 feet deep (Levy, 1978).

Today, Native peoples of Miwok, Patwin, and Ohlone descent continue to inhabit their ancestral homelands and revitalize their culture, protecting and caring for the land and fighting for access to practice their culture in a highly altered and developed landscape.

5.18.1.2 Contemporary Native American Setting

Contemporary Californian Native American tribes with ancestral connections to the project area include the Confederated Villages of Lisjan Nation, Indian Canyon Band of Costanoan Ohlone, Shingle Springs Band of Miwok Indians, Wilton Rancheria, Yocha Dehe Wintun Nation, and more. Members of these tribes continue to live throughout California and maintain cultural ties to their traditional homelands.

Today, these tribes continue to stay connected to their histories and cultures in many ways, including through ceremonies, language preservation and teaching traditional knowledge, community service, and tribal governance. These tribes offer language revitalization efforts and opportunities to learn traditional skills through cultural programs, workshops, youth activities, community events and gatherings, and ceremonial practices. Shingle Springs Band of Miwok Indians, for example, maintain a Traditional Ecological Knowledge department to assist members with learning about respectful and traditional uses of plants and animals (SSBMI, 2022).

Tribal community service programs support the health, well-being, and cultural connection of members, though services offered varies by the tribe. Federally recognized tribes, including Shingle Springs Band of Miwok Indians, Wilton

Rancheria, and Yocha Dehe Wintun Nation, provide a variety of programs to support their members, elders, youth, and communities. Non-federally recognized Ohlone tribes, such as Confederated Villages of Lisjan Nation and Indian Canyon Band of Costanoan Ohlone, provide cultural education, youth programs, and community support and events for its communities. Governance on tribal lands is guided by constitutions, codes, or ordinances and is overseen by the tribal council. Tribal Historic Preservation Officers (THPOs) manage cultural resources, and federally recognized tribes such as Shingle Springs Band of Miwok Indians and Wilton Rancheria also operate tribal courts, providing culturally informed forums for dispute resolution (SSBMI 2022; Wilton Rancheria 2022).

5.18.1.3 Sacred Lands File Search and Records Search Results

Padre Associates, Inc. emailed a request for a Sacred Lands File search to the NAHC on March 6 and 11, 2025, to request information about sacred or traditional cultural properties that may be located within the Project site. The NAHC responded on March 11 and 13, 2025, stating that the search of Sacred Lands file database did not include any previously identified sacred sites in the Project site. The NAHC also provided a list of local tribal representatives and recommended contacting each for more information.

As previously described in Section 5.5.1.3 (Cultural Resources, Record Search Results), Padre ordered archaeological record searches from the NWIC and NCIC (Appendix D), which revealed that portions of the Project site overlap with the Sacramento River Tribal Cultural Landscape (P-34-005225). This resource has been formally evaluated and recommended eligible for listing in the NRHP and the CRHR; thus, it is considered a tribal cultural resource under CEQA. No additional tribal cultural resources were identified.

Additionally, Padre reviewed buried site sensitivity analyses completed for previous projects on the east and west sides of the Sacramento River (Thomas, 2013; Elliot, 2015). Historically, the Project site was a swampy portion of the Sacramento-San Joaquin Delta and did not represent a formerly stable land surface that would have been available for human occupation. In the late-1920s, the swamp was covered by 20 to 40 feet of sediments dredged from the Sacramento River (Thomas, 2013). Additionally, the proximity of the Project site to the river channel, the low elevation, and the absence of soil development suggests a low sensitivity for buried cultural resources (Elliott, 2015). Thus, the potential to encounter buried tribal cultural resources is low, and tribal cultural resources are not anticipated to be discovered during Project construction or operations.

5.18.1.4 AB 52 Tribal Consultation

In accordance with Assembly Bill 52, CalGEM initiated a formal government-to-government consultation process to identify Tribal Cultural Resources (TCRs) and

address potential project impacts. CalGEM obtained from the NAHC a list of 28 tribes that could be affected by the proposed project. These tribes represent ancestral connections to the project area, which sits within the traditional territories of the Eastern Miwok and Patwin peoples. Specifically, the project site lies within the Montezuma Hills, a region historically used by the Southeastern Patwin, the Plains Miwok, and the Bay Miwok. CalGEM sent letters notifying the identified tribes on December 12, 2025, and December 15, 2025. The contacted tribes included:

- Amah Mutsun Tribal Band
- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Buena Vista Rancheria of Me-Wuk Indians
- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Calaveras Band of Mi-Wuk Indians
- California Valley Miwok Tribe
- Chicken Ranch Rancheria of Me-Wuk Indians
- Colfax-Todds Valley Consolidated Tribe
- Confederated Villages of Lisjan Nation
- Cortina Rancheria - Kletsel Dehe Band of Wintun Indians
- Costanoan Rumsen Carmel Tribe
- Grindstone Rancheria of Wintun-Wailaki
- Guidiville Rancheria of California
- Indian Canyon Mutsun Band of Costanoan
- Ione Band of Miwok Indians
- Jackson Rancheria Band of Miwuk Indians
- Muwekma Ohlone Tribe of the SF Bay Area
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Northern Valley Yokut / Ohlone Tribe
- Pakan'yani Maidu of Strawberry Valley Rancheria
- Shingle Springs Band of Miwok Indians
- The Ohlone Indian Tribe
- TSI-AKIM Maidu of the Taylorsville Rancheria
- Tule River Indian Tribe
- United Auburn Indian Community of the Auburn Rancheria
- Wilton Rancheria
- Wuksachi Indian Tribe/Eshom Valley Band
- Yocha Dehe Wintun Nation

The letters indicated that a response was required within ninety (90) days of receipt of the letter to request formal consultation. CalGEM received six (6) requests for consultation from the contacted tribes. CalGEM received a response from the following Tribes to request formal consultation and discuss the project: Yocha Dehe Wintun Nation, Wilton Rancheria, Confederated Villages of Lisjan Nation, Shingle Springs Band of Miwok Indians, Indian Canyon Band of

Costanoan Ohlone People, and United Auburn Indian Community. A summary of events related to communication between the tribes and CalGEM regarding the identification and treatment of tribal cultural resources is provided below:

- Yocha Dehe Wintun Nation responded on January 15, 2026, to request formal consultation and met with CalGEM on January 28, 2026, and February 13, 2026. During consultation, the Tribe expressed interest in all phases of the project and raised concerns regarding soil retention, cultural resource protection, and the long-term operational life of project wells. The Tribe requested advance notification of construction activities, including a minimum of one week's notice prior to weekly schedule preparation and 30 days' notice for all other project notifications. The Tribe also raised concerns regarding soil and materials leaving the project area and expressed interest in a soil retention mitigation measure for incorporation into the IS/MND. These concerns and requests are directly reflected in the development of **MM TCR-5** (Tribal Notification) and **MM TCR-6** (Soil Retention) and ensure that resources in Solano County are treated in accordance with the Yocha Dehe Wintun Nation's Treatment Protocol as required by **MM CUL-2/TCR-2** (Treatment of Unknown Resources) and **MM CUL-3/TCR-3** (Unanticipated Discovery of Human Remains).
- Wilton Rancheria responded on January 21, 2026, to request formal consultation and met with CalGEM on February 10, 2026. During consultation, the Tribe expressed interest in all phases of the project and raised concerns regarding ground disturbance, vegetation management, and cultural resource protection. The Tribe requested compensated tribal monitoring for ground disturbance and vegetation management activities in areas of concern, archaeological monitoring in designated areas, and spot-check monitoring for drilling and boring operations. The Tribe also requested the opportunity to review restoration plans and other relevant project plans and asked that the operator provide advance notice of project scheduling and additional information regarding vegetation management activities. These concerns and requests are directly reflected in the development of **MM TCR-4** (Tribal Notification), and **MM TCR-5** (Tribal Monitoring), which provides tribal access to observe ground-disturbing activities, and which establishes the framework for advance project scheduling notifications.
- Confederated Villages of Lisjan Nation responded on December 12, 2025, to request consultation and met with CalGEM on March 4, 2026. During consultation, the Tribe raised several questions regarding project details and potential impacts. The Tribe requested more specific information on the extent of land disturbance and the dimensions of subsurface pipelines. The Tribe also sought clarification on the well abandonment

process, including the procedures to be followed and potential hazards associated with abandonment activities. Additionally, the Tribe requested clarification on biological surveys conducted for the project and potential impacts to water quality. CalGEM provided the Tribe with additional project details following the meeting, including the IS/MND, Biological Survey, and specific information regarding well abandonment procedures and pipeline specifications. The Tribe indicated it would review the materials and contact CalGEM with any additional questions or concerns, with the option to request a follow-up meeting. These detailed project disclosures support the implementation of **MM CUL-1/TCR-1** (Worker Awareness Program), **MM CUL-2/TCR-2** (Treatment of Unknown Resources), and **MM CUL-3/TCR-3** (Unanticipated Discovery of Human Remains) by ensuring the Tribe has the necessary data to inform the protection of resources.

- Shingle Springs Band of Miwok Indians responded on January 22, 2026, to request formal consultation and met with CalGEM on February 13, 2026. During consultation, CalGEM provided the Tribe with project materials for review, including the Biological Survey, Cultural Resource Records Search Summary, and the draft IS/MND. The Tribe indicated it would review the materials internally and contact CalGEM with any additional concerns or recommendations, with the option to request a follow-up meeting. This consultation established the framework for **MM TCR-5** (Tribal Notification), ensuring the Tribe receives advance notice of project scheduling to allow for the coordination of tribal representatives.
- Indian Canyon Band of Costanoan Ohlone People responded on January 7, 2026, to request formal consultation and met with CalGEM on February 20, 2026. The Tribe expressed the cultural significance of living landscapes to their community. The Tribe indicated support for the cultural awareness training mitigation measure and offered to provide assistance with cultural awareness training and other needs as necessary. The Tribe deferred to the Confederated Villages of Lisjan Nation as the primary consulting tribe for this project. The Tribe's offer to assist with training is reflected in **MM CUL-1/TCR-1** (Worker Awareness Program), which requires that the training program be developed in coordination with interested tribes and include a local Tribal representative.
- United Auburn Indian Community responded on December 17, 2025, via email to request data files to review well locations and requested that the Tribal Cultural Resources chapter be revised to reflect the contemporary existence and presence of California Native American tribes, consistent with the intent of AB 52. The Tribe also requested that tribal cultural resource mitigation measures be presented separately from cultural resource measures. These requests have been incorporated into this document through the inclusion of Section 5.5.2.2 (Contemporary Native

American Setting) and the establishment of distinct Tribal Cultural Resource protections, including **MM TCR-4** (Tribal Notification), **MM TCR-5** (Tribal Monitoring), and **MM TCR-6** (Soil Retention).

5.18.2 Regulatory Setting

Federal, state, and local regulations, laws, policies, or other mandatory guidance from a lead or responsible agency pertaining to tribal cultural resources are summarized below to provide regulatory context for the Project. Where applicable, these regulatory requirements (RR) are referenced throughout the impact analysis and incorporated into the MMRP.

5.18.2.1 Federal

Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3049) (NAGPRA) (applies only to resources discovered on federal or tribal lands). NAGPRA establishes requirements concerning Native American human remains and certain cultural items discovered or excavated on federal or tribal lands. Because the Project is located on private land, NAGPRA does not apply to Project-related ground-disturbing activities.

Executive Order (EO) 13007. EO 13007 requires federal agencies with administrative or legal responsibility to manage federal lands to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sites (to the extent practicable permitted by law and not clearly inconsistent with essential agency functions). Because the Project is located on private land, EO 13007 does not apply to Project-related ground-disturbing activities.

5.18.2.2 State

Assembly Bill (AB) 52 (Pub. Res. Code §§ 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, and 21084.3). In September 2014, the California Legislature enacted AB 52, which established provisions under CEQA for the identification and evaluation of tribal cultural resources and consultation with California Native American tribes. AB 52 defines "tribal cultural resources" in Public Resources Code Section 21074 and establishes consultation procedures between lead agencies and California Native American tribes. Public Resources Code Section 21083.09 requires lead agencies to consider the effects of projects on tribal cultural resources as part of the CEQA process. Public Resources Code Section 21084.3 identifies examples of mitigation measures that may be used to avoid or minimize significant adverse impacts to tribal cultural resources **(RR CUL/TCR-1)**.

AB 52 establishes that if a project may cause a substantial adverse change in the significance of a tribal cultural resource, that project may have a significant effect on the environment. The statute also establishes requirements concerning

the confidentiality of information submitted by tribes regarding tribal cultural resources.

Discovery of Human Remains (Health and Saf. Code § 7050.5). This section provides for treatment of human remains exposed during construction; no further disturbance may occur until the County Coroner makes findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. The Coroner has 24 hours to notify the NAHC if the remains are determined to be of Native American descent. The NAHC contacts most likely descendants about how to proceed **(RR CUL/TCR-2)**.

Native American Human Remains (Pub. Resources Code § 5097.98). This section provides (1) a protocol for notifying the most likely descendent from the deceased if human remains are determined to be Native American in origin and (2) mandated measures for appropriate treatment and disposition of exhumed remains **(RR CUL/TCR-3)**.

Executive Order B-10-11. EO B-10-11 establishes as state policy that all agencies and departments shall encourage communication and consultation with California Indian Tribes and allow tribal governments to provide meaningful input into proposed decisions and policies that may affect tribal communities.

5.18.2.3 Local

Contra Costa County General Plan (2024)

Chapter 7: Conservation, Open Space, and Working Lands Element

- **Policy COS-P10.8:** Emphasize native people, immigrant populations, and the environmental and cultural heritage of the region as significant themes related to historic preservation. Consider natural, agricultural, ranching, mining, commercial, industrial, residential, political, transportation, recreation, education, maritime, and military themes when evaluating the significance of historic resources.
- **Policy COS-P10.11:** Partner with other agencies, culturally affiliated tribes, private entities, and nonprofit organizations to establish programs and funding mechanisms to preserve, restores, and enhance cultural, historic, and archaeologic sites.
- **Policy COS-P11.1:** Respect and protect tribal cultural resources, including historic, cultural, and sacred sites; cultural landscapes; views of or access to resources; and objects with cultural value to California Native American tribes.
- **Policy COS-P11.2:** Establish and maintain collaborative relationships with local Native American tribal representatives to facilitate tribal consultation and preservation of tribal cultural resources.

- **Policy COS-P11.3:** Consult with culturally affiliated tribes on General Plan and Specific Plan amendments with potential to impact tribal cultural resources. If an amendment redesignates a tribal cultural resource site on private land for open space purposes, evaluate the appropriateness of developing a treatment and management plan for tribal cultural resources in the affected area.
- **Policy COS-P11.4:** Consult with culturally affiliated tribes to identify and appropriately address tribal cultural resources through the discretionary development review process.
- **Policy COS-P11.5:** Consult with culturally affiliated tribes to assess the sensitivity of sites and protect recorded and unrecorded tribal cultural resources.
- **Policy COS-P11.9:** Avoid impacts of development on Native American archaeological resources and tribal cultural resources whenever possible. When impacts cannot be avoided, mitigate to the maximum feasible extent.
- **Policy COS-P11.10:** Consult with culturally affiliated tribes when developing mitigation measures to avoid or minimize impacts on tribal cultural resources. Mitigation could include, but is not limited to, a cultural resources treatment agreement between the developer and affected tribe(s) that addresses the treatment and disposition of cultural resources and human remains and tribal monitoring during earth-disturbing activities.
- **Policy COS-P11.11:** Upon discovery of a burial, human remains, or suspected human remains, require immediate halt to ground-disturbing activities such as excavation and grading, protection of the area surrounding the find, notification of the County Coroner, and compliance with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are determined to be Native American, require the applicant to consult with the Most Likely Descendants list to determine appropriate treatment, as prescribed in Public Resources Code Section 5097 et seq.

Solano County General Plan (2008)

Chapter 4: Resources

Implementation Programs:

- **RS.I-27:** Refer to the state Senate Bill 18 guidelines and requirements regarding cultural resources. Programs the County will engage in may include:

- Ensuring local and Native American governments are provided with information early in the planning process,
- Working with Native American governments to preserve and protect Native American cultural sites by designating them as open space where possible,
- Providing management and treatment plans to preserve cultural places, and
- Working with Native American groups to manage their cultural places.

Sacramento County General Plan (2011)

Conservation Element

Section VIII: Cultural Resources

- **Policy CO-152:** Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.
- **Policy CO-153:** Refer projects with identified archaeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations.
- **Policy CO-154:** Protection of significant pre-contact, ethnohistoric, and historic sites within open space easements to ensure that the resources are preserved in situ for perpetuity.
- **Policy CO-155A:** Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archaeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off-site reinterment in the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.
- **Policy CO-159:** Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

5.18.3 Impact Analysis

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources (CRHR), or in a local register of historical resources as defined in Public Resources Code Section 5020.1, subdivision (k), or

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.

a (i and ii) Less than Significant with Mitigation. The records search revealed that portions of the Project site overlap with the Sacramento River Tribal Cultural Landscape (P-34-005225), which has been formally evaluated and recommended eligible for listing in the NRHP and the CRHR. Thus, it is considered a tribal cultural resource under CEQA.

Specifically, the proposed Project includes approximately 30 acres (less than 0.1 percent) within the 333,592-acre Sacramento River Tribal Cultural Landscape. Since the proposed Project impacts represent less than 0.1 percent of the overall cultural landscape; the Project will not impact the resource's ability to communicate its significance. The buried site sensitivity analysis conducted for the Project indicates a low potential for buried tribal cultural resources within the Project site.

However, there remains a potential for significant tribal cultural materials and/or human remains to be exposed during Project activities. To reduce potential impacts from ground disturbance to tribal cultural resources, CRPC shall implement **MM CUL-1/TCR-1, MM CUL-2/TCR-2, MM CUL-3/TCR-3, MM TCR-4, MM TCR-5, MM TCR-6** to minimize destruction or damage to these resources. With the implementation of these measures, the impacts would be less than significant.

For Tribal review purposes, full mitigation text is provided below. In the public draft IS/MND, **MM CUL-1/TCR-1** through **MM CUL-3/TCR-3** will appear in the Cultural Resources section and be referenced herein.

MM CUL-1/TCR-1: Worker Cultural and Tribal Cultural Resource Awareness Program. All persons employed or otherwise working in the Project area shall attend a Cultural and Tribal Cultural Resource Awareness Program provided by CRPC before performing any work. The program shall be developed in coordination with interested Native American tribes and consist of a training from a local Tribal representative(s) and Qualified Archaeologist or Health, Safety, and Environmental representative. An employee-training program would be conducted before groundbreaking to explain all federal, state, local regulatory and CRPC requirements, as well as measures to avoid or minimize effects on cultural resources. Workers would be informed about the importance of maintaining designated protected areas. All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.

The training shall include, at a minimum:

- A brief overview of the cultural sensitivity of the Project area and surrounding area;
- What resources or tribal cultural resources could potentially be identified during ground disturbance;
- The protocols that apply in the event unanticipated cultural or tribal cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated;
- The requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans, including discussion of appropriate behaviors and responsive actions consistent with tribal values;
- Consequences in the event of noncompliance.

MM CUL-2/TCR-2: Treatment of Unknown Cultural or Tribal Cultural Resources. In accordance with Public Resources Code Section 21083.2(i), provisions shall be made for accidental discovery of cultural resources **(RR CUL/TCR-1)**.

If intact cultural resources are uncovered during Project implementation, all earth-disturbing activities within 100 feet of the find shall be temporarily suspended or redirected until a County-approved archaeologist has evaluated the nature and significance of the discovery. If the discovery is suspected to be human remains, the procedures outlined in **MM CUL-3/TCR-3** shall be followed.

In the event that a potentially significant cultural resource is discovered, CRPC, CalGEM, and any local, state, or federal agency with approval or permitting authority over the Project that has requested or required, such notification shall be notified immediately or within 48 hours upon discovery.

The location of the discovery must be kept confidential, and measures shall be taken such as the establishment of an Environmentally Sensitive Area (ESA) using fencing or other suitable material to ensure that the area is secured to minimize site disturbance and potential vandalism. Impacts to previously unknown significant cultural resources shall be avoided through preservation in place if feasible.

A treatment plan developed by the archaeologist shall be submitted to CalGEM staff for review and approval. A treatment plan typically includes protocols for the temporary recovery of resources after Project completion, a research design and excavation methodology to remove resources that cannot be avoided, and a description of reporting procedures. If the archaeologist believes that damaging

effects to the archaeological resource will be avoided or minimized, then work in the area may resume.

Tribal Cultural Resources (TCRs), or resources of cultural significance to Native American tribes include, but are not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits. If a discovery is determined to be a TCR, the culturally affiliated Tribe shall consult with CalGEM to identify the boundaries of the resource and determine appropriate preservation or avoidance measures, including redesign or adjustment of construction activities and long-term management. If avoidance is infeasible, a reburial location in proximity to the find where future disturbance is not anticipated shall be identified. CRPC and CalGEM shall facilitate respectful reburial, including providing a location consistent with Tribal preferences, excavation, and assistance with reburial as requested. Permanent curation of TCR materials shall not occur without written approval from the Tribe. Work at the TCR discovery location shall not resume until authorization is granted by CalGEM in coordination with the Tribe.

All discoveries shall be documented in a Department of Parks and Recreation (DPR) 523 form within two weeks and submitted in a timely manner to the appropriate CHRIS center.

Treatment of TCRs in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).

MM CUL-3/TCR-3: Unanticipated Discovery of Human Remains. Human remains include bones or bone fragments, ashes and soils from ceremonial burning, associated funerary objects, unassociated funerary objects, grave goods, and items of cultural patrimony.

If human remains are encountered during project activities, all provisions of California Health and Safety Code Section 7050.5 **(RR CUL/TCR-2)** and California Public Resources Code Section 5097.98 **(RR CUL/TCR-3)** shall be followed. Work shall stop immediately within 100 feet of the discovery, regardless of whether the construction is being actively monitored. A County-approved archaeologist must be contacted within 24 hours, who shall consult with the County Coroner. In addition, a culturally affiliated Tribal Representative and CalGEM staff shall be notified within 24 hours. The Tribal Representative, in coordination with CalGEM shall determine if the find qualifies as a TCR pursuant to California Public Resources Code Section 21074, and the Tribal Representative shall make

recommendations for further evaluation and treatment as necessary.

If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness are discovered during construction activities, the County Coroner and the culturally affiliated Tribe shall be contacted immediately. The County Coroner shall notify the NAHC within 24 hours of this determination and a Most Likely Descendant (MLD) shall be identified.

No work shall proceed in the discovery area until consultation is complete and procedures to avoid or recover the remains have been implemented. CRPC shall secure and protect the area from further disturbance and work shall not resume in the discovery area until treatment measures are completed. Typical avoidance procedures include Project redesign to avoid the remains or deeding the area into a permanent conservation easement. If avoidance is not feasible, recovery of the remains will be planned with the MLD.

Treatment and disposition of human remains in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).

MM TCR-4: Tribal Notification of Ground-Disturbing Activities: At least thirty (30) calendar days prior to anticipated ground-disturbing activities within each county, CRPC shall provide written notification to consulting Tribes. The notification shall include:

- Anticipated construction start date
- General construction phasing schedule
- Contact information for CRPC's Project Manager and field supervisor

For Tribes that have requested monitoring or site-specific notification, CRPC shall provide written notice at least seven (7) calendar days prior to ground-disturbing activities at each individual well pad.
If schedule changes occur that make 7-day notice infeasible, notice shall be provided as soon as practicable, but no less than 48 hours prior to disturbance, unless otherwise agreed to by the requesting Tribe.
This measure provides notification only and does not independently require monitoring.

CRPC shall maintain records of all Tribal notifications issued and shall make such records available to CalGEM upon request.

MM TCR-5: Tribal Monitoring During Ground-Disturbing Activities: Where tribal monitoring has been requested by consulting Tribes, CRPC shall provide Tribal monitors with reasonable access to observe ground-disturbing activities, including grading, excavation, and drilling into previously undisturbed native soils. CRPC shall provide notification to Tribes consistent with **MM TCR-5**.

If more than one Tribe requests monitoring for the same location, the Tribes may coordinate among themselves to designate monitoring representation. If coordination does not occur within a reasonable timeframe, CRPC, subject to CalGEM oversight, shall establish a monitoring schedule that allows monitoring while maintaining construction feasibility and safety requirements.

Tribal monitoring shall be observational in nature and shall not authorize work stoppage except as provided under **MM CUL-2/TCR-2** and **MM CUL-3/TCR-3**.

Monitoring reports and documentation shall be retained by CRPC and made available upon request.

MM TCR-6: Temporary Retention of Excavated Native Soils and Drilling Cuttings. At sites where Tribal monitoring has been requested pursuant to **MM TCR-5**, CRPC shall temporarily retain and store excavated native soils, including drilling cuttings and associated materials generated from previously undisturbed native soils, on-site prior to off-site transport or disposal.

CRPC shall provide secure (locked), on-site storage for culturally sensitive soils or objects temporarily retained for Tribal inspection, with access limited to Tribal Representatives. Storage may range from a lockbox to a shipping container or secure fenced area depending on the quantity and nature of materials. Excavated soil and drilling cuttings shall be staged in a designated area accessible for visual inspection by the Tribal monitor and qualified archaeologist. Retained materials shall be held for a period not to exceed 72 hours following excavation or generation, unless a potential Tribal cultural resource or human remains are identified, in which case **MM CUL-2/TCR-2** or **MM CUL-3/TCR-3** shall be implemented.

If no Tribal cultural resources or human remains are identified within the retention period, CRPC may proceed with off-site transport or disposal

(See section 2.4.2.2 Drilling Waste Disposal for more information on the off-site transport and disposal of drilling waste).

This measure applies only to soils and cuttings derived from previously undisturbed native soils and does not apply to imported materials, previously disturbed soils, or recirculated drilling fluids.
Nothing in this measure authorizes indefinite delay or construction activities.

CalGEM shall ensure compliance through the Mitigation Monitoring and Reporting Program. Monitoring reports and documentation shall be retained by CRPC and made available to CalGEM upon request.

During the operational life of the project (anticipated to be approximately 30 years), the Operator shall provide advance notice to consulting Tribes prior to any new ground-disturbing maintenance or rework activities that extend beyond previously disturbed areas. Such notification shall be consistent with the procedures described in **MM TCR-4**. This commitment does not constitute a separate mitigation measure.

5.18.4 Mitigation Measures

Implementation of the following mitigation measures would reduce the potential for cultural resource impacts to less than significant:

- MM CUL-1/TCR-1: Worker Cultural and Tribal Cultural Resource Awareness Program
- MM CUL-2/TCR-2: Treatment of Unknown Cultural or Tribal Cultural Resources
- MM CUL-3/TCR-3: Unanticipated Discovery of Human Remains
- MM TCR-4: Tribal Notification of Ground-Disturbing Activities
- MM TCR-5: Tribal Monitoring During Ground-Disturbing Activities
- MM TCR-6: Temporary Retention of Excavated Native Soils and Drilling Cuttings

5.19 UTILITIES AND SERVICE SYSTEMS

UTILITIES AND SERVICE SYSTEMS – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
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?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

5.19.1 Environmental Setting

The Project includes the installation of 83 new natural gas wells, and associated equipment, facilities, and infrastructure, as well as establishment of new well pads and access roads. No utilities currently serve the Project sites, and no additional utility services would be necessary during the operational phase of the Project since the onsite equipment would be run on field gas.

However, during construction portable generators would be utilized when necessary. Though implementation of the proposed Project does not include any new source of permanent lighting on the Project site, portable night lighting will be necessary seven days a week during the drilling phase of the Project (estimated at 15 days per well). This transitory additional source of lighting will be removed when Project drilling activities are concluded.

A water truck would be used to supply the required water during the construction phase of the Project and water would be purchased from the Calpine facility in the City of Rio Vista approximately 3 miles from the Project area. Water usage would be approximately 20 water truck trips per well during construction activities and approximately 2,800 barrels of water per well (232,400 barrels total) for drilling activities. No post-construction expansion of water or sewer service is proposed or required as part of the Project.

Drilling waste generated by the Project is anticipated to be non-hazardous. This is based on the types of materials that would be generated during drilling operations, including native soils, drilling cuttings, and drilling fluids that are typically composed of water-based mud systems without hazardous additives. Final waste classification would be determined in accordance with applicable hazardous waste regulations administered by the California DTSC. If necessary, representative samples of drilling waste would be collected and analyzed using standard analytical methods (e.g., TTLC and STLC) to determine whether the waste exhibits hazardous characteristics under Title 22 of the CCR. If analytical testing indicates that any drilling waste exceeds applicable hazardous waste thresholds, the material would be characterized as hazardous waste and managed, transported, and disposed of in accordance with all applicable federal, state, and local regulations.

It is anticipated that approximately 1,600 barrels of drill cuttings will be generated per well (for a Project total of approximately 132,800 barrels). All drilling waste, including drill cuttings, would be managed within a closed-loop system and stored in tanks before the waste is hauled away for disposal. Solid drilling waste would be transported in covered bins to a regional landfill (such as Potrero Hills Landfill in Solano County, approximately 30 miles from the Project area; or Sacramento County (Kiefer) Landfill, approximately 50 miles from the Project area). The remaining capacity of the Potrero Hills Landfill is

approximately 13,872,000 cy. The remaining capacity of the Sacramento County Landfill is approximately 102,300,000 cy (CalRecycle, 2025).

5.19.2 Regulatory Setting

There are no relevant federal laws and regulations applicable to the Project. State and local regulations, laws, and policies pertaining to utilities and service systems relevant to the Project are included below.

5.19.2.1 State

Sustainable Groundwater Management Act (Cal. Water Code §§ 10720-10737.8). In 2014, California enacted the Sustainable Groundwater Management Act (Water Code § 10720 et seq.). The Act, and related amendments to California law, require that all groundwater basins designated as high- or medium-priority in the California Department of Water Resources (DWR) California Statewide Groundwater Elevation Monitoring (CASGEM) program and that are subject to critical overdraft conditions must be managed under a new Groundwater Sustainability Plan (GSP), or a coordinated set of GSPs, by January 31, 2020. High- and medium-priority basins that are not subject to critical overdraft conditions must be managed under a GSP. Where GSPs are required, one or more local GSA must be formed to cover the basin and prepare and implement applicable GSPs. The Act does not apply to basins that are managed under a court-approved adjudication, or to low-or very–low-priority basins.

The Act defines groundwater as "water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water but does not include water that flows in known and definite channels." A groundwater extraction facility is defined as "a device or method for extracting groundwater from within a basin" Water Code Section 10721(g-h).

California Integrated Waste Management Act (Pub. Res. Code, §§ 40050 et seq.). California adopted its first statewide, general recycling program in 1989. The Integrated Waste Management Act of 1989 administered by CalRecycle, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills.

5.19.2.2 Local

There are no local policies pertaining to Utilities and Service Systems that are also applicable to the Project.

5.19.3 Impact Analysis

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?

No Impact. The Project consists of the installation of natural gas wells and infrastructure and does not include activities or new facilities that require new or expanded water, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities.

Preliminary investigations of the work areas indicate that no interactions with existing utilities requiring relocation are expected. However, prior to grading or drilling activities, further investigation will be conducted through Underground Service Alert (USA) and/or a private utility locator to confirm that no conflicts would occur.

No electrical power will be utilized to supply natural gas well equipment, as it will be run on field gas supplies. However, portable generators would be utilized when necessary, during construction activities. Project activities would use limited water for well installation and dust control, as necessary, however these activities would not require new or expanded water supplies or facilities. No permanent relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities would be required to support the Project. Therefore, no impact would result.

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

Less than Significant Impact. Construction activities would require water for dust control, grading, and gas well installation. During the construction phase of the Project, a water truck would be utilized to supply the required water during well site preparation and drilling activities. Approximately 2,800 Bbl of water per well will be required for drilling, or a total of 232,400 barrels. Water would be purchased from the Calpine facility in the City of Rio Vista approximately 3 miles from the Project area and trucked to the Project site. As discussed in Section 5.10, Hydrology and Water Quality, there are sufficient local water supplies available. No long-term water demand would be created as no water would be necessary to operate the natural gas wells. Therefore, implementation of the proposed Project would not impact water supply, and a less than significant impact would result.

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?

No Impact. The Project involves the installation of natural gas wells and supporting infrastructure and does not include activities or new facilities that would require new or expanded wastewater treatment services. During construction, portable toilets would be used to provide wastewater services, as necessary. Therefore, the Project would not affect the capacity of any wastewater treatment provider to serve its existing commitments. Therefore, there would be no impact.

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?

Less Than Significant Impact. Drilling waste and vegetation removed during Project construction would be non-hazardous and taken to a local municipal landfill for disposal. Specifically, it is anticipated that approximately 1,600 barrels of drill cuttings will be generated per well (for a Project total of 132,800 barrels). All drilling waste, including drill cuttings, would be managed within a closed-loop system and stored in tanks before the waste is hauled away for disposal. Solid drilling waste would be transported in covered bins to a regional landfill (such as Potrero Hills Landfill in Solano County, approximately 30 miles from the Project area; or Sacramento County (Kiefer) Landfill, approximately 50 miles from the Project area). The remaining capacity of the Potrero Hills Landfill is approximately 13,872,000 cy. The remaining capacity of the Sacramento County Landfill is approximately 102,300,000 cy. During operations, the proposed Project would not create any solid waste. Therefore, the capacity of local infrastructure would not be exceeded, nor would the Project impair the attainment of solid waste reduction goals. Therefore, there would be a less than significant impact.

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

No Impact. All drilling waste, including drill cuttings, would be managed within a closed-loop system and stored in tanks prior to off-site disposal. The proposed Project would not generate solid waste during operations and would comply with federal, state, and local solid waste statutes and regulations. Therefore, no impact would occur.

5.19.4 Mitigation Measures

The Project would not result in significant impacts to utilities and service systems; therefore, no mitigation is required.

5.20 WILDFIRE

WILDFIRE – If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

5.20.1 Environmental Setting

The Project area is located within the existing Rio Vista Gas Field. The Project area is vegetated with wetlands, agricultural fields, and patches of grasses amongst cleared, open space to accommodate its current uses as open space, and agricultural and cattle grazing areas. The Project area is completely located within a CAL FIRE designated Local Responsibility Area (LRA), meaning local government is responsible for wildfire protection (CAL FIRE 2025b). No portion of the Project site is located in or near State Responsibility Areas, or lands classified as very high fire hazard severity zones (CAL FIRE 2023). The Project area is in proximity to the Sacramento-San Joaquin Delta which generally warrants high soil moisture which could lessen fire risk. Existing vegetation will be cleared

prior to Project activities and managed according to CAL FIRE defensible space standards and other state and local standards listed in Section 5.20.2 below.

The Montezuma Fire Protection District provides firefighting service to the Solano County portion of the Project area, with the nearest station approximately 1.5 miles northeast of the Solano County portion of the Project area (Solano LAFCO, 2020). The Delta Fire Protection District provides fire protection services to the Sacramento County portion of the Project area, with the nearest station approximately 1.5 miles west from the Sacramento County portion of the Project area (DFPD, 2008). An automatic mutual aid agreement exists between local fire protection districts within Solano and Sacramento counties to ensure quick response times (City of Isleton, 2025). The Contra Costa County portion of the Project area is not within the coverage of any fire district (Contra Costa County, 2024a). On Bradford Island, emergency fire responses may be provided on a limited, life-safety basis by the East Contra Costa Fire Protection District when available, and by CAL FIRE resources through their Cooperative Fire Protection Program and Contra Costa County's Cooperative Fire Protection Agreement (CAL FIRE, 2025c).

The nearest designated evacuation route is along SR 12 in Solano and Sacramento counties located approximately 0.75 miles northeast of the Project area in Solano County and located beside the Project area in Sacramento County (Sacramento County, 2025c; Solano County, 2008).

5.20.2 Regulatory Setting

5.20.2.1 Federal

Occupational Safety and Health Act (29 U.S.C. §§ 651-678). Construction activities associated with the Project are subject to federal worker-safety regulations under the OSHA's Fire Protection and Prevention requirements (29 CFR 1926 Subpart F). These regulations establish mandatory practices to reduce fire hazards at construction sites, including requirements for fire-suppression equipment, safe handling and storage of flammable materials, control of ignition sources, and implementation of fire-prevention procedures.

5.20.2.2 State

Wildland Fire Prevention (Pub. Resources Code § 4442). Except as otherwise provided in this section, no person shall use, operate, or allow to be used or operated, any internal combustion engine which uses hydrocarbon fuels on any forest-covered land, brush-covered land, or grass-covered land unless the engine is equipped with a spark arrester, as defined in subdivision (c), maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire pursuant to Section 4443.

5.20.2.3 Local

Solano County General Plan (2008)

Chapter 5: Public Health and Safety Chapter

- **Policy HS.P-31:** Require that all structures or new developments be built with defensible space.
- **Policy HS.P-39:** Require new development to provide adequate access for fire and emergency vehicles and equipment that meets or exceeds the standards. These standards are found in two parts of the California Fire Safe Regulations (California Code of Regulations, Title 14, Division 1.5, Chapter 7): Subchapter 2, Articles 1-5 (commencing with § 1270, SRA Fire Safe Regulations); and Subchapter 3, Article 3 (commencing with § 1299.01, Fire Hazard Reduction Around Buildings and structures Regulations).
- **Regulation HS.I-17:** All new developments must comply with fire-resistant landscaping and defensible space requirements. These standards shall meet or exceed Title 14 of the California Code of Regulations (CCR). This specifically includes Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with § 1270, SRA Fire Safe Regulations); and Division 1.5, Chapter 7, Subchapter 3, Article 3 (commencing with § 1299.01, Fire Hazard Reduction Around Buildings and Structures Regulations). New development shall also comply with the California Public Resource Code Section 4291 (State Defensible Space Requirements), which requires the following:
    - Create a defensible space of at least 100 feet around the structure.
    - Remove all dead plants, grass, weeds, and other flammable vegetation from the defensible space.
    - Remove tree limbs that are within 10 feet of the chimney or stovepipe of the structure.
    - Trim tree limbs that are within 6 feet of the ground or within 10 feet of the structure.
    - Remove all dead branches, leaves, and other debris from roofs and rain gutters.
    - Create horizontal and vertical spacing between trees and shrubs to prevent the spread of fire.
    - Space trees at least 10 feet apart from each other.

- Maintain defensible space year-round, not just during fire season.
- Obtain any necessary permits from local fire agencies before conducting any vegetation management activities.
- Provide and maintain access to the property for emergency vehicles.

Sacramento County General Plan (2017)

Chapter 16: Safety

- **Policy SA-23:** The County shall require that all new development meets the local fire district standards for adequate water supply and pressure, fire hydrants, and access to structures by firefighting equipment and personnel.

5.20.3 Impact Analysis

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

Less than Significant Impact. Implementation of the proposed Project would require the establishment of access roads to new well pads. These access roads would be contained within the Project area from existing roadways to the extent feasible. As shown in Table 2-9, Project construction would generate additional worker commute trips (approximately 4 to 16 round trips per day per county, depending on the Project phase) and a smaller number of heavy truck/semi-truck deliveries (approximately 1 to 12 round trips per day per county, depending on the Project phase) over the construction period. These trips would use existing regional and local roads that already accommodate similar agricultural and service traffic. Because daily trip volumes are relatively low and temporary in nature, Project trips would not generate a substantial increase in traffic on the nearest evacuation route, which is SR 12. The proposed Project would not substantially impair an adopted emergency evacuation plan. Therefore, there would be a less than significant impact.

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?

Less than Significant Impact. The proposed gas extraction wells would be located on graded well pads that are kept clear of vegetation. Vegetation would be cleared within an approximately 30-foot corridor from pipeline installation rights-of-way, and this vegetation management would be maintained as needed throughout the duration of the Project to reduce fuel

loads. Gas extraction equipment would be required to be constructed in compliance with the federal, state, and local fire regulations stated above. No habitable structures with occupants occur within the proposed Project area. Therefore, there would be a less than significant impact.

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?

Less than Significant Impact. The Project includes the construction of 83 gas extraction wells and associated infrastructure and facilities, including the establishment of access roads. Gas extraction facilities would be tied into existing gas distribution lines. No electric utility lines would be constructed.

Construction of the proposed Project would require the temporary introduction of construction equipment that would utilize flammable fuels, such as diesel and gasoline. Operation of this equipment would generate heat and potential spark from hot tailpipes and exhaust. However, no portion of the Project site is located in or near State Responsibility Areas, or lands classified as very high fire hazard severity zones (CAL FIRE, 2023). The Project area is in proximity to the Sacramento-San Joaquin Delta which generally warrants high soil moisture which could lessen fire risk. Existing vegetation will be cleared as required prior to Project activities, and this material would be promptly removed, or otherwise managed to prevent the temporary accumulation of dry, combustible fuel or debris. Therefore, there would be a less than significant impact.

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?

Less than Significant Impact. No portion of the Project site is located within or near State Responsibility Areas, or lands designated as Very High Fire Hazard Severity Zones. As discussed above, the Project would not substantially increase surface runoff in the area or significantly alter the drainage patterns of any rivers or streams. Additionally, the Project would not significantly impact soil stability within the Project site. Therefore, there would be a less than significant impact.

5.20.4 Mitigation Measures

The Project would not result in significant impacts from wildfire; therefore, no mitigation is required.

5.21 MANDATORY FINDINGS OF SIGNIFICANCE

MANDATORY FINDINGS OF SIGNIFICANCE –	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects.)	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

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?

Less Than Significant with Mitigation. As analyzed in Biological Resources (Section 5.4), following mitigation implementation, the Project would not significantly adversely affect fish or wildlife habitat, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate plant or animal community, or reduce the number or restrict the range of an endangered, rare, or threatened species. Implementation of **MM BIO-1** through **MM BIO-15**, **RR HAZ-1**, and **RR HAZ-2**, as well as best management practices currently undertaken as part of existing Rio Vista Gas Field operations would ensure that the short-term, minor, and localized potential for impacts on special status species and their habitats would be less than significant.

The potential effects on historic and archaeological resources are described in Sections 5.5 (Cultural Resources), and 5.18 (Tribal Cultural Resources). Based on cultural resources records, as well as past use of the Project area including agriculture, road and levee maintenance, the Project will not cause any new impacts nor alter the current condition of any resources identified within the proposed Project site(s). Implementation of **MM CUL-1/TCR-1** through **MM CUL-3/TCR-3** would further reduce the potential for impacts to cultural or tribal cultural resources. Therefore, a less than significant impact would result following implementation of these measures.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects.)

Less than Significant with Mitigation. As provided in this MND, the Project has the potential to significantly impact the following environmental resources: Air Quality (Section 5.3), Biological Resources (Section 5.4), Cultural/Tribal Cultural Resources (Sections 5.5 and 5.18), Energy (Section 5.6), Hazards and Hazardous Materials (Section 5.9) Hydrology and Water Quality (Section 5.10), and Noise (Section 5.13). However, measures have been identified in each of these resource sections that would reduce their respective potential impacts to less than significant with mitigation.

Project activities are consistent with existing gas operations within the Rio Vista Gas Field. These operations have been planned for by Solano, Sacramento, and Contra Costa counties and the Project zoning, and land use designations for agricultural use are compatible with oil and gas development. There are no other Projects planned in the immediate vicinity of the Project site that would

result in cumulatively considerable impacts when occurring concurrently with the proposed Project, based on searches/review of Solano, Sacramento, and Contra Costa counties' project lists and review (Solano County, 2026; Sacramento County, 2026b; and Contra Costa County, 2026). For a cumulative impact to occur, other past, present, or reasonably foreseeable projects would need to have individual impacts on the same resource areas, during the same time frame, or within overlapping areas. However, the phased construction activities associated with gas well drilling are not expected to result in cumulative impacts, as they would occur in isolated areas throughout unincorporated areas of Solano, Sacramento, and Contra Costa counties that do not overlap with any other proposed, permitted and foreseeable projects, and any potential impacts would be addressed through Project design, existing facility best management practices, and proposed mitigation measures. Therefore, with mitigation, cumulative impacts from the Project would be less than significant.

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

Less than Significant with Mitigation. The Project would not result in any substantial adverse effects to human beings, either directly or indirectly. As discussed in Aesthetics (Section 5.1), Agriculture or Forest Resources (Section 5.2), Air Quality (Section 5.3), Biological Resources (Section 5.4), Cultural Resources (Section 5.5), Energy (Section 5.6), Geology and Soils (Section 5.7), Greenhouse Gas Emissions (Section 5.8), Hydrology and Water Quality (Section 5.10), Land Use (Section 5.11), Mineral Resources (Section 5.12), Noise (Section 5.13), Population and Housing (Section 5.14), Public Services (Section 5.15), Transportation (Section 5.17), Tribal Cultural Resources (Section 5.18), Utilities (Section 5.19), or Wildfire (Section 5.20), the Project would not substantially affect resources used or enjoyed by the public, residents, or others in the area. All potential impacts would be mitigated to less than significant levels. Additionally, the Project would have no effect on Recreation (Section 5.16).

Potential Project-related effects on public safety and well-being are discussed in Section 5.9, Hazards and Hazardous Materials. This analysis did not identify any potential adverse effects on human beings that could not be avoided or minimized through implementation of the proposed mitigation measures or compliance with standard regulatory requirements. With these measures in place, all Project impacts on human health and safety would be less than significant.

6.0 MITIGATION MONITORING AND REPORTING PROGRAM

Project Title: Rio Vista Well Development Project

Project Applicant: California Resources Production Corporation (CRPC)

Project Location: Solano, Sacramento and Contra Costa counties, Rio Vista Gas Field. The Project is located in the Sacramento-San Joaquin River Delta region near the City of Rio Vista in northern California. The proposed wells are located in the Rio Vista Gas Field near State Route 12 within Solano, Sacramento, and Contra Costa counties. The Project consists of approximately 141 acres. The subject property is currently owned and operated by CRPC and consists of an existing gas field that has been in operation since 1936 as one of the largest gas fields in California.

Lead Agency: California Geologic Energy Management Division (CalGEM)

Environmental Document: Draft Initial Study and Mitigated Negative Declaration (IS/MND) Rio Vista Well Development Project

6.1 MITIGATION REQUIREMENTS

The California Environmental Quality Act (CEQA) requires lead agencies to impose feasible mitigation measures in approving a project that could have significant adverse environmental effects.[17] The purpose of the mitigation is to substantially lessen or avoid those significant effects.[18] All mitigation measures must be fully enforceable in a mitigation monitoring and reporting program (MMRP).[19]

This is the MMRP for the Rio Vista Well Development Project. Table 6-1 in this MMRP identifies the mitigations that CalGEM found to be feasible and imposed as conditions of project approval. Those conditions of approval were implemented as Regulatory Requirements of the project and included as conditions for the MMRP. Therefore, mitigation may consist of Regulatory Requirements (RR), Design Features (DF), or Mitigation Measures (MM). Table 6-1 sets forth the mitigation plan as follows:

Regulatory Requirement/Design Feature/Mitigation Measure Number and Title - Tracks the numbering sequence and titles in the Initial Study/Mitigated Negative Declaration.

Mitigation Description - Describes what actions the operator must take to avoid or mitigate the environmental effect(s).

Timing & Method of Verification - Specifies the mitigation monitoring schedule and verification method or documentation.

Reporting - Identifies the report(s) required, if applicable.

Responsible Agency - Names the agency or agencies responsible for overseeing the mitigation measure.

[17] Cal. Code Regs., tit. 14, §§ 15002(a)(3), 15070(b)(1), 15097(a), 15126.4(a)(1).

[18] Pub. Resources Code, § 21081.6; Cal. Code Regs., tit. 14, §§ 15041, 15370.

[19] Pub. Resources Code, § 21081.6; Cal. Code Regs., tit. 14, §§ 15074(d), 15097(a), 15126.4(a)(2).

Table 6-1. Mitigation Monitoring and Reporting Program

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
Section 5.1 Aesthetics	**DF AES-1; RR AES-1 Temporary Night-Time Lighting**	Temporary night-time lighting for Project construction activities would be shielded and directed downward and would be turned off when sufficient daytime light is present.	During construction activities	CRPC shall maintain lighting compliance documentation, including lighting plans and inspection records, and provide them to CalGEM upon request.	CRPC and contractors; CalGEM
Section 5.3 Air Quality	**MM AQ-1; RR AQ-1: Implement Basic Construction Emissions Control Practices and Best Management Practices**	Prior to construction activities, CRPC shall prepare and submit a Fugitive Dust Control and Emissions Compliance Plan to CalGEM and the applicable air district(s). The plan shall identify the procedures, responsible personnel, monitoring methods, and documentation protocols that will be used to implement the following measures during construction: • Water all exposed surfaces twice daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads. • Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Wet power vacuum street sweepers shall be used to remove any visible track-out of mud or dirt from adjacent public roads at least once daily. The sweeping schedule will be determined by CRPC personnel, considering site conditions and work requirements. • All trucks and equipment, including their tires, shall be washed off prior to leaving the site. • Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel. • Limit vehicle speeds on unpaved roads to 15 miles per hour. This speed limit will be discussed during daily tailgate meetings and posted as needed. • Pave all roadways, driveways, sidewalks, and parking lots as soon as possible. Similarly, building pads should	Prior to construction/During construction activities	CRPC shall submit to CalGEM and the applicable air district(s): a Fugitive Dust Control Plan, current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation, and onsite monitoring documentation.	CalGEM, BAAQMD, SMAQMD, YSAQMD, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		be completed promptly after grading unless seeding or soil binders are used. • All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph as forecasted by the National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS) website. https://www.weather.gov/. • Publicly visible signs shall be posted displaying the name and telephone number of the lead agency contact for dust complaints. This contact person shall respond and initiate corrective action within 48 hours. The appropriate Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrances to the project site. • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. Records of equipment conditions will be recorded and retained records will be stored for up to three years. CRPC shall comply with the CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation. Current certificates of compliance and onsite monitoring documentation demonstrating compliance with applicable fleet requirements shall be maintained and provided to CalGEM prior to and during construction activities, and to the applicable air district upon request.			
Section 5.3 Air Quality	**MM AQ-2; RR AQ-2; RR AQ-3; RR AQ-4: Construction and Operations Phase Mitigation Measures – Emissions Reduction Credits**	CRPC will procure ERCs from the BAAQMD and SMAQMD to cover the construction NOx exceedances in accordance with each district's rules. In addition, CRPC will purchase ERCs from the YSAQMD to cover the operational NOx exceedances in accordance with YSAQMD rules. Inventory/receipt of payment shall be submitted to CalGEM to demonstrate the purchase of ERCs.	Prior to construction/During construction activities	Inventory/receipt of payment shall be submitted to CalGEM to demonstrate the purchase of ERCs.	CalGEM, BAAQMD, SMAQMD, YSAQMD, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
Section 5.4 Biological Resources	**RR BIO-1: Lake and Streambed Alteration Agreement (Fish and Game Code §§ 1600 et seq.)**	Prior to any activity that may substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of a river, stream, or lake, CRPC shall notify the California Department of Fish and Wildlife and obtain a Lake and Streambed Alteration Agreement, if required.	Prior to construction/During construction activities	If required, CRPC shall obtain an approved Lake and Streambed Alteration Agreement and submit it to CalGEM to verify compliance.	CalGEM, CDFW, CRPC and contractors
Section 5.4 Biological Resources	**DF BIO-1: Vegetation Clearing and Grading**	Vegetation clearing and grading activities for establishment of well pads/access roads and pipeline corridors would be limited to the proposed Project footprint. Vegetation clearing to a width of approximately 16 feet on existing access roadways may be required and would be performed as part of routine maintenance prior to Project implementation.	During construction activities	CRPC shall maintain field inspection logs and construction compliance documentation demonstrating that vegetation clearing is confined to approved areas. Documentation shall be submitted to CalGEM upon request.	CRPC and contractors
Section 5.4 Biological Resources	**MM BIO-1: Worker Environmental Awareness Program.**	CRPC shall develop and implement a Worker Environmental Awareness Program (WEAP) for all personnel that may access the Project. A WEAP training shall be conducted for each individual prior to their initial Project access, and annually thereafter until Project completion. Annual updates shall be made to the WEAP training to account for current work areas, type of work, and current observations of special status species and sensitive habitats. The program shall consist of a presentation with material given on-site or off-site by trained personnel (e.g., Qualified Biologist or assigned Company Environmental Specialists). The Qualified Biologist(s) and/or assigned Company Environmental Specialist(s) shall have the following: • A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field. • Experience in construction monitoring for compliance with relevant biological mitigation measures. • Experience in surveying and/or monitoring for the specific special status species that have the potential to occur in or near the Project area. • Pre-approval from CalGEM prior to start of work on the Project.	Prior to construction	A sign-in sheet documenting compliance must be submitted to CalGEM. Each worker must sign an acknowledgment confirming completion of environmental training, and these records must be maintained. Copies of the training materials, attendee list, and signed acknowledgment forms must also be submitted to CalGEM upon request. Additionally, a training transcript, video, or informational binder covering specific procedures must be kept accessible for personnel to review as needed.	CalGEM, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		WEAP trainings shall cover an overview of the laws and regulations governing the protection of biological resources; a description of protected species, including special-status species known to occur or with the potential to occur in the Project area; their status and legal protections; what is considered habitat and disturbance; a description of wetlands and waterways within the Project area; biological resource protection measures; and a list of designated CRPC and Qualified Biologist contacts. The program shall provide general awareness to workers and supply materials to assist workers in recognizing protected species that may occur on the Project area, avoidance and minimization measures to protect biological resources, and how to report biological resources if observed on site. Reporting procedures shall include the immediate reporting (i.e., via phone call, then text or email if no immediate response from contact) of special status species to designated CRPC and Qualified Biologist contacts. In addition to the above, the WEAP shall include the following: • The WEAP shall emphasize the need to avoid contact with wildlife, to avoid entry into areas where biological resources have been identified for avoidance, to review project specific pre-activity biological results reports and maps, and to implement all applicable avoidance and minimization measures included in the project specific pre-activity biological results report. • All project personnel present on the project activity site must sign a statement verifying that they have completed the WEAP, and that they understand the biological requirements during project activities. CRPC shall maintain a physical and digital list of all persons who have completed the WEAP and shall provide the list to CalGEM upon request. An annual refresher training shall be required for all on-site personnel.			
Section 5.4 Biological Resources	**MM BIO-2: Best Management Practices for Biological Resources**	The following Best Management Practices (BMPs) shall be implemented during all construction, drilling, and operation activities to avoid and minimize potential significant adverse impacts on biological resources: • CRPC and the Qualified Biologist(s) shall retain an updated map of special status species occurrences and sensitive habitats to avoid during the Project and	Throughout construction activities	CRPC shall maintain BMP implementation logs and submit them to CalGEM upon request.	CRPC and contractors, CalGEM, CDFW/USFW

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		will regularly communicate these locations to Project workers as observations occur. • All vehicles shall observe a 15 mile-per-hour speed limit in all areas of disturbance and on unpaved roads unless otherwise posted. Off-road traffic outside designated access routes shall be prohibited. Speed limit signs shall be posted at visible locations at the point of site entry and at regular intervals on all unpaved access roads. • All disturbance activities, except emergency situations or drilling that may require continuous operations, shall occur only during daylight hours. Continuous 24-hour drilling activities shall use directed lighting and shielding methods. • Only temporary night-lighting for drilling activities is proposed for the Project, and lighting would be shielded, oriented downward, and only on when there is not sufficient daylight. Temporary lighting would comply with Sacramento County General Plan Policy LU-31, which requires outdoor lighting to preserve the natural nighttime environment by minimizing glare and light pollution, and California Title 24 Energy Code, which requires outdoor lighting to be turned off when there is sufficient daylight. • Wrappers, cans, bottles, bottle tops, and food scraps shall be disposed of in closed containers and routinely removed from the project activity site by the respective work crew, at intervals of no less than once per week. The company Environmental Specialist and/or Qualified Biologist shall ensure compliance with this measure at least weekly. Excavations, spoil piles, unpaved access roadways, and parking and staging area shall be subject to dust control (i.e., spraying surfaces with water using a water truck). Herbicides application shall be in accordance with existing laws and manufacturers' instructions (i.e., pesticide/herbicide labels). All herbicide chemicals used must be registered for use in the U.S. and California and must have a label certifying that the Federal Environmental Protection Agency and the California Department of Pesticide Regulation have approved the herbicide for use. No rodenticides shall be used.			

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		• All open trenches, excavations, and/or holes more than 2 feet deep shall be backfilled or covered at the end of each workday to prevent wildlife entrapment. If an excavation or hole is too large to cover, escape ramps shall be installed at an incline ratio of no greater than 2:1 at least for every 500 feet, and at each end. All trenches and excavations shall be inspected for the presence of wildlife each day prior to the start of work. Immediately before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. Well cellars shall be drained and covered in order to keep wildlife from becoming entrapped. The Qualified Biologist shall facilitate self-relocation or relocate any non-listed special status species that are found entrapped to suitable habitat outside of the Project area. CRPC shall immediately contact the applicable agency(ies) (e.g., CDFW, USFWS via phone call for further guidance in the event of entrapment of a state of federally listed species. • All construction pipes, culverts, or similar structures that are stored at a construction site overnight shall be capped prior to storage. If any wildlife is discovered inside a pipe, that section of pipe is not to be moved until the animal vacates the pipe on its own accord. The pipe shall be inspected at a minimum daily until the animal has moved out of the pipe. • Discovery of state or federally listed species that are injured or dead shall be reported immediately via telephone and within 24 hours in writing to CDFW and USFWS Office, as applicable, with a copy to CalGEM. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information, such as the cause of injury or death (if known). • All activity shall remain within the proposed Project footprint and shall use previously disturbed areas to the maximum extent feasible to minimize the amount of new disturbance in areas with existing natural lands (e.g., utilizing an existing well pad/cleared area for soil/fill material storage instead of on vegetated areas). • Vehicle, equipment, and material storage shall be limited to previously disturbed areas or predefined			

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		storage/laydown areas that are incorporated into work site limits. • No vehicles or construction equipment shall be parked within wetlands or waterways, including any dry wash or drainage, nor shall vehicles or construction equipment cross, or travel within wetlands/waterways where and when water flows or present. No materials shall be stored within wetlands/waterways. A minimum 10-foot setback from the edge of wetlands/waterways shall be adhered to. • All construction equipment and construction personnel vehicles shall be checked underneath prior to moving them, to ensure that no wildlife is under equipment/vehicles. If any individuals are detected beneath equipment or vehicles, the equipment or vehicles shall be left in place until the wildlife moves out of harm's way on its own accord, as determined by a Qualified Biologist. • All tracked vehicles and other construction equipment entering the Project area from outside of Solano, Sacramento, or Contra Costa counties, shall be washed or maintained to be weed-free. • All washing of trucks, paint, equipment, or similar activities including concrete washout shall occur in designated areas/facilities where runoff is fully contained for collection prior to off-site disposal. Wash water may not be discharged from the Project activity site, must be stored in a manner that excludes sensitive wildlife species, and located at least 100 feet from any wetlands or waterways.			
Section 5.4 Biological Resources	**MM BIO-3: Biological Pre-Activity Surveys and Monitoring**	A Qualified Biologist (biological monitor) shall monitor all Project activities that have the potential to harm or impact special status wildlife. The Qualified Biologist(s) shall have the following: • A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field. • Experience in construction monitoring for compliance with relevant biological mitigation measures.	Prior to and throughout construction activities. Compliance shall be verified through pre-activity clearance surveys, daily biological monitoring logs, field inspection records, and incident reports maintained by the Qualified Biologist and CRPC.	Pre-activity survey reports, monitoring logs. CRPC shall maintain daily biological monitoring logs and clearance survey records. Pre-activity clearance confirmations, daily monitoring reports, and any incident documentation shall be submitted to CalGEM	CalGEM, CRPC and contractors, a Qualified Biologist

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		• Experience in surveying and/or monitoring for the specific special status species that have the potential to occur in or near the Project area. • Pre-approval from CalGEM prior to start of work on the Project. Project activities that require a biological monitor include but are not limited to ground disturbance associated with well pad/access road construction and pipeline installation. The biological monitor shall conduct a biological clearance survey of all work areas prior to the start of daily Project activities, including walking transects of the work area(s) and visual inspection (utilizing binoculars as needed) of all vegetation, excavations/trenches, and equipment. The purpose of the clearance survey is to identify any biological resources (nests, dens, burrows) within the work areas that may have occurred since the last workday, any wildlife species within the work areas, and to inspect any exclusion areas and make sure they remain intact. Once the work areas have been cleared, the biological monitor shall inform the work crew that work may proceed. Results of daily biological clearance surveys shall be recorded on daily monitoring/compliance forms which shall be retained by CRPC and provided to CalGEM upon request. In addition, the biological monitor shall monitor all vegetation removal and initial ground disturbance. Once activities that have the potential to harm or impact wildlife have been completed, the Qualified Biologist, in coordination with CRPC, will determine if biological monitoring should continue based on the work activity, for example, activities that do not include vegetation removal and initial ground disturbance and any sensitive resources occurrences (e.g., nearby sensitive habitats, recent observations of special status species). Activities that will likely not require a biological monitor include drilling operations and well maintenance. If at any time during Project activities any special status wildlife species are observed within the Project area, work around the animal's immediate area shall be stopped and the biological monitor shall be immediately notified (if they are not the initial observer). The biological monitor shall determine an appropriate temporary avoidance zone based on the species and work shall be redirected to an area within the Project area that would not impact these species until the animal has left the area of its own volition. Listed species will be allowed to leave the Project area unimpeded and will not be handled or		upon request and maintained in the project compliance file for the duration of construction. Incident notifications involving special-status species shall be transmitted immediately to CDFW and/or USFWS, as applicable, with written follow-up within 24 hours.	

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		relocated without any applicable permits that shall be obtained prior to the start of the Project (e.g., USFWS Biological Opinion, CDFW Incidental Take Permit). Work would resume once the animal is clear of the work area. In the unlikely event a special status species is injured or killed by Project-related activities, the biological monitor would immediately stop work and notify CRPC, who shall immediately contact the appropriate agencies (i.e., CDFW and/or USFWS). Discovery of state or federally-listed species that are injured or dead shall be reported immediately via telephone and within 24 hours in writing to CDFW and/or USFWS, as applicable, with a copy to CalGEM. CRPC and the biological monitor shall provide photos and details of the incident, and any adaptive management measures that will be implemented to avoid future incidents (e.g., reduced equipment speed, increased avoidance buffer size). The biological monitor shall keep notes of all species observed, work activities conducted and compliance concerns, if any, on daily monitoring forms, which shall be retained by CRPC and provided to CalGEM and other applicable agencies upon request.			
Section 5.4 Biological Resources	**MM BIO-4. Burrowing Owl Pre-Construction Surveys and Avoidance**	Prior to any construction, vegetation removal, or ground-disturbing activities, a burrowing owl survey shall be conducted by a Qualified Biologist following CDFW's Staff Report on Burrowing Owl Mitigation (CDFG, 2012). Surveys should cover the Project area and adjoining areas within 150 meters (approximately 500 feet), or more where direct or indirect effects could potentially extend offsite, to detect active or inactive burrows and burrowing owl activity. If active or inactive burrows are confirmed during pre-construction surveys, a Qualified Biologist shall determine whether Project activities could directly or indirectly result in disturbance, injury, mortality, or loss of occupied burrows or habitat. The Qualified Biologist shall establish and maintain appropriate no-disturbance buffers around each active burrow consistent with the Staff Report. Buffer distances shall be based on the time of year, type and intensity of Project disturbance, existing disturbance levels, observed owl behavior, visual barriers, topography, and other site-specific conditions. Avoidance buffers shall be delineated using pin	Prior to and throughout construction activities	Pre-activity survey reports, monitoring logs to document buffers (as applicable) shall be maintained by CRPC and available to CalGEM upon request.	CDFW CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		flags and/or survey stakes with flagging and shall be communicated to work crews prior to work near the avoidance zone. The avoidance buffers shall be consistent with the applicable setback recommendations in the Staff Report unless a different buffer is supported by site-specific conditions and evaluation by the Qualified Biologist, in consultation with CDFW. Occupied burrows identified outside the area of ground disturbance but within an area where Project activities could result in direct or indirect disturbance shall be buffered with appropriate avoidance measures determined by the Qualified Biologist in coordination with CDFW. Any active or inactive burrow(s) with avoidance buffers shall be monitored by the Qualified Biologist at a minimum of once per week to document burrow activity. Avoidance buffers and other buffer measures shall be monitored for maintenance needs weekly at a minimum. If active or inactive burrow avoidance is determined to be infeasible during the non-breeding season (between September 1 and January 31), a Qualified Biologist may implement burrow exclusion measures in accordance with the CDFW (2012) Staff Report on Burrowing Owl Mitigation. Because the burrowing owl is a candidate species under CESA, any activities that may result in take, require an Incidental Take Permit from CDFW pursuant to Fish and Game Code Section 2081(b) prior to implementation. Burrow exclusion, may include one-way doors in burrow entrances left in place for 48 hours to ensure the owl(s) have left the burrow before the excavation, with the burrow visited twice daily for evidence that owls are inside and can't escape. Prior to burrow exclusion measures, a Burrowing Owl Exclusion Plan will be prepared and approved by CDFW. Excavation and closure of burrows will occur only pursuant to the CDFW-approved Burrowing Owl Exclusion Plan and an authorized Incidental Take Permit.			
Section 5.4 Biological Resources	**MM BIO-5: Pre-Construction Swainson's Hawk Protocol Nesting Surveys**	Project activities and vegetation removal shall be prioritized to occur outside of Swainson's hawk nesting season (September 15 to March 1). If project activities between March 1 to	Prior to construction activities occurring during the nesting	CRPC shall submit Swainson's hawk survey reports within 10 days of	CDFW CalGEM

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		September 15 cannot be avoided, surveys shall be conducted by a Qualified Biologist for active Swainson's hawk nests. The Qualified Biologist(s) shall have the following: • A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field. • Experience in construction monitoring for compliance with relevant biological mitigation measures. • Experience in surveying and/or monitoring for Swainson's hawk. • Pre-approval from CalGEM prior to start of work on the Project. The applicant shall conduct a protocol-level survey in conformance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*, (Swainson's Hawk Technical Advisory Committee, 2000) hereby incorporated by reference. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. A written report summarizing the pre-construction survey results shall be prepared within 10 days of survey completion and submitted via email to CalGEM and CDFW for review. If the surveys show that there are no active Swainson's hawk nests within 0.5-mile of construction activities, then no further mitigation for nest disturbance will be required. If active Swainson's hawk nests are identified near the Project area, a 0.5-mile nest protection buffer shall be delineated within the Project area using pin flags and/or survey stakes with flagging and shall be shown to work crews prior to any work near the avoidance zone(s). Any occupied nest(s) with avoidance buffers shall be monitored by the Qualified Biologist at a minimum of once per week to document nest activity. Avoidance buffers shall be monitored for maintenance needs weekly at a minimum. The following nest protection/buffer measures shall be required: • Apply a nest protection buffer with a minimum distance of 0.5-mile from an active nest. Postpone Project activities within the nest protection buffer until after the	season (September 15 to March 1)	completion to CalGEM and CDFW. If active nests are identified, buffer implementation documentation and weekly monitoring logs shall be maintained by the Qualified Biologist and provided to CalGEM and CDFW upon request.	CRPC and a Qualified Biologist

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		young have fledged and are no longer dependent on the nest tree. The minimum nest protection buffer may be reduced in coordination with CDFW if existing site conditions, habituation to disturbance, proposed disturbance levels, and nest concealment or barriers between the nest and activities indicate a reduced buffer would be effective. If it is not possible to postpone Project activities within the minimum nest protection buffer, CRPC shall coordinate with CDFW to develop a monitoring protocol and implement full-time monitoring of the nest by a qualified raptor biologist for any Project activities within 0.5 miles, including monitoring the nest ahead of time to establish baseline conditions prior to start of work. If the monitoring biologist observes signs of distress (e.g., increased flushing from nest, increase vocalizations) in response to Project activity noise and/or equipment, they shall have the authority to stop construction work and coordinate with CDFW to establish additional protection measures to ensure avoidance of nest abandonment prior to the re-start of Project activities.			
Section 5.4 Biological Resources	**MM BIO-6: Swainson's Hawk Off-Site Foraging Habitat Management**	If nesting occurrences of Swainson's hawks occur within 10 miles of the permanent well development areas (e.g. well pads and access road components) the applicant shall coordinate with CDFW prior to the start of work in each county to identify off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the Project site. Mitigation credits shall be obtained through a CDFW-approved mitigation bank for Swainson's hawk with a service area that covers the Project area. The CDFW approved mitigation ratio required per acre is determined by the distance between impacted foraging habitat (project area) and the nearest active Swainson's hawk nest tree. When the project area is located within 1 mile from an active nest tree, the applicable mitigation ratio is 1:1. When the project area is located between 1 and 5 miles of an active nest tree, the applicable mitigation ratio is 0.75:1. When the project area is located between 5 and 10 miles of an active nest tree, the applicable mitigation ratio is 0.5:1.	Prior to construction activities, compliance shall be verified through CDFW coordination records and mitigation bank credit transfer records as applicable.	CRPC shall submit documentation of CDFW coordination records and receipt of payment of mitigation credits (as applicable) to CalGEM and CDFW prior to construction. All records shall be retained by CRPC and made available by request.	CDFW CRPC and contractors
Section 5.4 Biological Resources	**MM BIO-7: Nesting Bird Pre-Construction Surveys and Avoidance**	If construction or vegetation removal work occurs outside of nesting bird/raptor season (typically August 31 to January 1), impacts would be avoided. Surveys would not be required for	Prior to and throughout construction activities	CRPC shall prepare a written report summarizing pre-	CDFW CalGEM

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		work conducted during this part of the year, and no further mitigation for nest disturbance would be required. If construction is scheduled to occur during nesting bird/raptor season (typically January 1 to August 31), the following measures shall reduce impacts to a less than significant level: • If vegetation removal, ground disturbance, or other construction activities occur between January 1 to August 31, pre-construction surveys shall be conducted by a Qualified Biologist of suitable habitat within 500 feet of worksites and disturbance areas for nesting birds and raptors. The Qualified Biologist(s) shall have the following: • A bachelor's degree in biology, zoology, wildlife biology, natural resources, ecology, conservation biology, environmental biology, or related field. • Experience in construction monitoring for compliance with relevant biological mitigation measures. • Experience in surveying and/or monitoring for nesting birds/raptors. • Pre-approval from CalGEM prior to start of work on the Project. In addition, large trees, transmission towers, bridges, and other similar structures within 0.5 miles of the work area shall be surveyed for golden eagle nesting activities, prior to work and weekly throughout the nesting season. All pre-construction surveys shall be conducted within 10 days prior to the start of construction, ground disturbance, or vegetation removal. If nests are identified, a suitable nest protection buffer shall be recommended and implemented by the Qualified Biologist based on the species, nest phenology, topography, activity type, and site-specific conditions (generally 250 ft for passerines, 500 ft for raptors, and up to 0.5 miles for golden eagle/Swainson's hawk). Any occupied nest(s) shall be monitored by the Qualified Biologist at a minimum of once per week to document nest activity and confirm when/if young have fledged. Avoidance buffers shall be monitored for maintenance needs weekly at a minimum. Construction activities shall be prohibited within the established buffer zones until the young have fledged. If a lapse in Project-related activities occurs for 10 days or longer during the nesting season, another focused pre-activity nesting bird survey shall		construction survey results within 10 days of survey completion. The report shall be submitted to CalGEM. All pre-activity survey reports shall be retained by CRPC and made available to applicable regulatory agencies upon request.	CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		be coordinated by CRPC and conducted by the Qualified Biologist before construction activities can be reinitiated. A written report summarizing the pre-construction survey results shall be prepared within 10 days of survey completion and submitted to CalGEM. Pre-activity survey reports shall be retained by CRPC and made available to applicable agencies upon request.			
Section 5.4 Biological Resources	**MM BIO-8. American Badger Pre-Construction Surveys and Avoidance**	Prior to ground disturbance, grading, or vegetation removal activities, a pre-construction survey of the work areas and a 200-ft buffer shall be completed by a Qualified Biologist, to identify any active badger burrows. If an occupied American badger den is identified, the following measures shall be implemented and information regarding the location and number of badger dens shall be included in a pre-construction survey report: • Occupied American badger dens (non-maternity dens) shall be avoided by establishing a minimum 50 feet non-disturbance buffer. This avoidance buffer shall be delineated within the Project area using pin flags and/or survey stakes with flagging and shall be shown to work crews prior to any work near the avoidance zone(s). Avoidance buffers shall be monitored for maintenance needs weekly at a minimum. • During the typical pup-rearing season for American badger (February 15 through July 1), occupied dens shall be presumed to be maternity dens and shall be avoided by establishing a minimum 200-foot non-disturbance buffer until the burrow is no longer active. • A Qualified Biologist shall establish (e.g., flag) non-disturbance buffer areas, as identified above, and shall monitor all ground-disturbing activities near the avoidance zone to ensure no work is encroaching on established buffer areas. Destruction of a maternity den burrow shall only proceed after the maternity den is no longer active (i.e., badger adult(s) and cubs have left and no longer utilize the den) and no badgers are present within the burrow. Destruction of a maternity den burrow may occur only after the den is confirmed inactive, meaning that adult badgers and cubs have vacated the den and no longer use it, and no badgers are present within the burrow.	Prior to and throughout construction activities	CRPC shall prepare a written report summarizing pre-construction survey results within 10 days of survey completion. The report shall be submitted to CalGEM. All pre-activity survey reports shall be retained by CRPC and made available to applicable regulatory agencies upon request.	CalGEM, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		CRPC shall prepare a written report summarizing pre-construction survey results within 10 days of survey completion. The report shall be submitted to CalGEM. All pre-activity survey reports shall be retained by CRPC and made available to applicable regulatory agencies upon request.			
Section 5.4 Biological Resources	**MM BIO-9. Bumblebee Pre-Construction Habitat Assessment and Avoidance Surveys**	Prior to Project initiation, a habitat assessment and surveys of the Project area shall be conducted by Qualified Biologists in accordance with CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (Survey Considerations) (2023). The habitat assessment shall be conducted by a Qualified Biologist of the entire Project area and a 100-foot buffer to evaluate the availability of key resources for CESA candidate bumble bee species, which shall include documenting foraging resources (blooming flowers), nesting substrates, (such as undisturbed soil, rodent burrows), and potential overwintering sites (loose soil, leaf litter, or undisturbed ground cover). This assessment shall be completed prior to bumble bee surveys, which shall be completed during the appropriate season for surveys (i.e., April – September), which shall be completed prior to the start of work. Following the habitat assessment to determine presence of suitable resources, surveys must be performed by a Qualified Biologist during peak bumble bee activity (April–September) under suitable weather conditions (≥60°F, low wind, no rain). Results of bumble bee surveys and associated weather/site conditions shall be recorded on survey data sheets by surveyors. Standardized methods involve timed aerial netting (minimum 30 minutes per acre) with non-lethal documentation and careful handling. Survey efforts must capture precise GPS locations, detailed habitat characteristics, and species-level identification, with multiple visits recommended across the season, in accordance with the CDFW Survey Considerations. The CDFW Survey Considerations recommended at least three surveys/site visits prior to Project implementation, spaced two to four weeks apart, using a minimum of one person-hour of searching per three acres of suitable habitat. If any candidate bumblebee species are detected during surveys, the Qualified Biologist and CRPC shall immediately notify CDFW for further coordination to avoid or mitigate	Prior to and throughout construction activities	CRPC shall prepare and submit a pre-construction survey report summarizing habitat assessment findings and survey results to CalGEM prior to ground-disturbing activities. Survey data sheets and avoidance buffer documentation shall be retained by CRPC and made available to CalGEM upon request.	CDFW CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		impacts. If active nests of candidate bumblebee species are identified, a 100-foot no disturbance buffer zone shall be established with pin flags and/or survey stakes and flagging around the nest to reduce the risk of disturbance or accidental take until CDFW can be contacted for further guidance. Avoidance zones will be shown to any work crew that will be working in the area and will be monitored at least weekly for maintenance needs.			
Section 5.4 Biological Resources	**MM BIO-10: Northwestern Pond Turtle Pre-Construction Surveys and Avoidance**	A Qualified Biologist shall conduct pre-construction surveys for northwestern pond turtle 48 hours prior to ground disturbance to ensure that individuals are not present in the work area. Survey area will include suitable wetland and upland habitat areas in the Project area and within a 100-foot buffer. Avoidance buffers shall be delineated with pin flags or survey stakes and flagging and shall be shown to any work crew that will be working near the avoidance zone. A Qualified Biologist shall monitor the avoidance buffer weekly, at minimum, to verify that the buffer remains adequately delineated and maintained. A qualified biological monitor shall be present to monitor Project activities during any in- or near-water work and initial ground disturbance that has the potential to impact special status species. Should northwestern pond turtle be found within the work areas, a Qualified Biologist will require all work to stop until the turtle moves out of the work area and shall notify USFWS via email within 48 hours for further coordination to avoid or mitigate impacts.	Prior to and throughout construction activities. Compliance shall be verified through pre-construction survey reports, field monitoring logs, buffer delineation records, and incident documentation (if applicable).	CRPC shall prepare and maintain pre-construction survey reports and weekly monitoring logs. Survey documentation and incident reports shall be submitted to USFWS upon request and provided to CalGEM to verify compliance.	USFWS CRPC and contractors
Section 5.4 Biological Resources/Section 5.10 Hydrology and Water Quality	**MM BIO-11: Preliminary Aquatic Resource Delineation**	Prior to the initiation of construction, CRPC shall conduct a preliminary aquatic resource delineation of the Project site to define the limits of jurisdictional areas and determine the extent of project impacts. This delineation will be completed in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports for the USACE Sacramento District (USACE, 2016) and shall be completed in the winter or spring months. The delineation will be verified by the USACE and should be completed ahead of or in the early permitting stages of the Project to identify potential conflicts as early as possible. The verified delineation will provide	Prior to construction activities	CRPC shall prepare and submit an aquatic resource delineation report to USACE Sacramento District and to CalGEM to verify compliance.	CalGEM, USACE, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		jurisdictional boundaries for the purposes of avoidance or with the impact acreage necessary for preparing permit application if impacts to jurisdictional areas cannot be avoided. If the Project can fully avoid jurisdictional aquatic resources, no further mitigation would be required. If the Project cannot fully avoid delineated aquatic resources, MM BIO-13 will apply.			
Section 5.4 Biological Resources/Section 5.10 Hydrology and Water Quality	**MM BIO-12: Temporary Flagging or Barrier Fencing to Protect Sensitive Habitat**	A Qualified Biologist will identify and flag or fence sensitive wetland habitat within 50 feet of the Project disturbance areas to ensure it is avoided during Project development activities. Areas inside of the flagging or fencing will be excluded from equipment or other ground disturbing activities during Project activities. The type of fencing installed shall be appropriate for the activities proposed in the adjacent work areas, including silt fencing in areas with potential runoff and/or orange construction fencing where work delineation is needed. The flagging or barrier fencing shall be monitored weekly at a minimum for maintenance needs. CRPC shall maintain documentation within weekly field logs verifying installation and maintenance of exclusion fencing. Documentation shall be made available to CalGEM upon request.	Prior to and throughout construction activities	CRPC shall maintain documentation within weekly field logs verifying installation and maintenance of exclusion fencing. Documentation shall be made available to CalGEM upon request.	CalGEM, CRPC, and contractors
Section 5.4 Biological Resources/Section 5.10 Hydrology and Water Quality	**MM BIO-13; RR HYDRO-1; RR HYDRO-2; RR HYDRO 3: Compliance with Permit Conditions for Impacts to Jurisdictional Wetlands and Waterways**	If Project impacts to federal and/or state jurisdictional areas are identified, CRPC shall obtain all necessary permits for impacts to waters of the U.S. from the USACE (approximately 6 to 12 months for permit review/approval), for impacts to waters of the state from the CVRWQCB (approximately 5 to 9 months for permit review/approval), and/or for potential impacts to stream features from CDFW (approximately 3 to 6 months for permit review/approval) prior to project implementation. Implementation of the Project shall comply with all permit conditions and CRPC shall coordinate and complete compliance monitoring/documentation of all conditions at the applicable intervals. If required, compensatory mitigation must be consistent with the regulatory requirements pertaining to mitigation type, location, and ratios, but will be accomplished with a minimum of 1:1 replacement ratio. If compensatory mitigation is needed, the applicant may satisfy all or a portion of their	Prior to and following construction activities	CRPC shall document compliance with permit conditions. Permit compliance reports shall be submitted to applicable regulatory agencies (USACE, CVRWQCB, and CDFW) in accordance with permit conditions.	USACE CVRWQCB CDFW CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		mitigation through the purchase of "credits" at a mitigation bank approved by the USACE, RWQCB, and/or CDFW for compensatory mitigation of impacts to hydrologically similar waters, or through other means, including but not limited to on- or off-site habitat creation, conservation easement, or contribution to approved in-lieu habitat fund. The mitigation must be approved by the permitting agencies and shall be implemented by CRPC subsequent to permit issuance and prior to project impact.			
Section 5.4 Biological Resources/ Section 5.10 Hydrology and Water Quality	**MM BIO-14: Revegetation of Temporary Work Areas**	The applicant shall collect and store the topsoil from all temporary work areas located within riparian habitat or wetlands, including proposed pipeline corridors. Topsoil will be collected by scraping and collecting the top six inches of the ground using heavy equipment (e.g., skid steer, backhoe, excavator, dozer) in temporary work areas. Collected topsoil shall be stockpiled and temporarily stored directly on an existing disturbed well pad. Once work is completed within temporary work areas, the topsoil shall be redistributed and spread evenly across the disturbed areas using heavy equipment. A Qualified Biologist shall oversee and direct the topsoil collection and replacement process. In addition to topsoil collection and replacement, a native seed mix appropriate to the types of riparian and wetland habitats present in the Project area shall be applied to temporary work areas following Project activities. A Qualified Biologist shall select the appropriate type of native seed mix(es) and apply the seed to disturbed areas via hand casting. Any revegetation of temporary disturbance areas within jurisdictional wetlands/waterways shall be monitored in accordance with the applicable permits from USACE, RWQCB, and/or CDFW.	Throughout construction activities	Field monitoring logs and documentation shall be maintained by CRPC and the Qualified Biologist and submitted to CalGEM. Documentation shall also be made available upon request to USACE, RWQCB, and CDFW.	CalGEM, USACE, RWQCB, and/or CDFW, CRPC and contractors
Section 5.4 Biological Resources/Section 5.10 Hydrology and Water Quality	**MM BIO-15: Erosion Control Best Management Practices**	Standard best management practices (BMPs), such as the use of silt fencing and straw wattle, shall be implemented within terrestrial areas of temporary and/or permanent ground disturbance, as applicable, to minimize erosion and sedimentation to nearby ephemeral and intermittent channels. BMPs shall not consist of monofilament plastic netting that may entangle wildlife. CRPC shall implement the weekly monitoring of BMPs for maintenance needs.	Prior to and throughout construction activities	CRPC shall maintain weekly field inspection logs demonstrating BMP implementation. Records shall be made available to CalGEM upon request.	CalGEM, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
Section 5.5 Cultural Resources/5.18 Tribal Cultural Resources	**MM CUL-1/TCR-1: Worker Cultural and Tribal Cultural Resource Awareness Program**	All persons employed or otherwise working in the Project area shall attend a Cultural and Tribal Cultural Resource Awareness Program provided by CRPC before performing any work. The program shall be developed in coordination with interested Native American tribes and consist of a training from a local Tribal representative(s) and Qualified Archaeologist or Health, Safety, and Environmental representative. An employee-training program would be conducted before groundbreaking to explain all federal, state, local regulatory and CRPC requirements, as well as measures to avoid or minimize effects on cultural resources. Workers would be informed about the importance of maintaining designated protected areas. All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training. The training shall include, at a minimum: • A brief overview of the cultural sensitivity of the Project area and surrounding area; • What resources or tribal cultural resources could potentially be identified during ground disturbance; • The protocols that apply in the event unanticipated cultural or tribal cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; • The requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans, including discussion of appropriate behaviors and responsive actions consistent with tribal values; • Consequences in the event of noncompliance. CRPC shall maintain records of all completed training, including signed attendance sheets and training materials. These records shall be submitted to CalGEM prior to ground-disturbing activities and shall be made available to CalGEM and participating Tribes upon request.	Prior to and throughout construction activities	CRPC shall maintain records of all completed training, including signed attendance sheets and training materials. These records shall be submitted to CalGEM prior to ground-disturbing activities and shall be made available to CalGEM and participating Tribes upon request.	CRPC and contractors
Section 5.5 Cultural Resources/Section 5.18 Tribal Cultural Resources	**MM CUL-2/TCR-2; RR CUL-1/TCR-1: Treatment of Unknown Cultural or Tribal Cultural Resources**	In accordance with Public Resources Code section 21083.2(i), provisions shall be made for accidental discovery of cultural resources. If intact cultural resources are uncovered during Project implementation, all earth-disturbing activities within 100 feet of	Throughout ground disturbing construction activities	A treatment plan developed by the archaeologist shall be submitted to CalGEM for review and approval. All discoveries shall be	CalGEM CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		the find shall be temporarily suspended or redirected until a County-approved archaeologist has evaluated the nature and significance of the discovery. If the discovery is suspected to be human remains, the procedures outlined in MM CUL-3/TCR-3 shall be followed. In the event that a potentially significant cultural resource is discovered, CRPC, CalGEM, and any local, state, or federal agency with approval or permitting authority over the Project that has requested or required, such notification shall be notified immediately or within 48 hours upon discovery. The location of the discovery must be kept confidential, and measures shall be taken such as the establishment of an Environmentally Sensitive Area (ESA) using fencing or other suitable material to ensure that the area is secured to minimize site disturbance and potential vandalism. Impacts to previously unknown significant cultural resources shall be avoided through preservation in place if feasible. A treatment plan developed by the archaeologist shall be submitted to CalGEM staff for review and approval. A treatment plan typically includes protocols for the temporary recovery of resources after Project completion, a research design and excavation methodology to remove resources that cannot be avoided, and a description of reporting procedures. If the archaeologist believes that damaging effects to the archaeological resource will be avoided or minimized, then work in the area may resume. Tribal Cultural Resources (TCRs), or resources of cultural significance to Native American tribes include, but are not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits. If a discovery is determined to be a TCR, the culturally affiliated Tribe shall consult with CalGEM to identify the boundaries of the resource and determine appropriate preservation or avoidance measures, including redesign or adjustment of construction activities and long-term management. If avoidance is infeasible, a reburial location in proximity to the find where future disturbance is not anticipated shall be identified. CRPC and CalGEM shall facilitate respectful reburial, including providing a location consistent with Tribal preferences, excavation, and assistance		documented in a Department of Parks and Recreation (DPR) 523 form within two weeks and submitted in a timely manner to the appropriate CHRIS center.	

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		with reburial as requested. Permanent curation of TCR materials shall not occur without written approval from the Tribe. Work at the TCR discovery location shall not resume until authorization is granted by CalGEM in coordination with the Tribe. All discoveries shall be documented in a Department of Parks and Recreation (DPR) 523 form within two weeks and submitted in a timely manner to the appropriate CHRIS center. Treatment of TCRs in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).			
Section 5.5 Cultural Resources/Section 5.18 Tribal Cultural Resources	**MM CUL-3/TCR-3; RR CUL-2/TCR-2; RR CUL-3/TCR-3: Unanticipated Discovery of Human Remains**	Human remains include bones or bone fragments, ashes and soils from ceremonial burning, associated funerary objects, unassociated funerary objects, grave goods, and items of cultural patrimony. If human remains are encountered during project activities, all provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98 shall be followed. Work shall stop immediately within 100 feet of the discovery, regardless of whether the construction is being actively monitored. A County-approved archaeologist must be contacted within 24 hours, who shall consult with the County Coroner. In addition, a culturally affiliated Tribal Representative and CalGEM staff shall be notified within 24 hours. The Tribal Representative, in coordination with CalGEM shall determine if the find qualifies as a TCR pursuant to California Public Resources Code Section 21074, and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary. If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness are discovered during construction activities, the County Coroner and the culturally affiliated Tribe shall be contacted immediately. The County Coroner shall notify the NAHC within 24 hours of this determination and a Most Likely Descendant (MLD) shall be identified. No work shall proceed in the discovery area until consultation is complete and procedures to avoid or recover the remains	Throughout ground disturbing construction activities	CRPC shall submit agency coordination documentation to CalGEM. Discovery reports and associated correspondence shall be retained by CRPC and provided to CalGEM and other applicable agencies upon request.	CalGEM NAHC CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		have been implemented. CRPC shall secure and protect the area from further disturbance and work shall not resume in the discovery area until treatment measures are completed. Typical avoidance procedures include Project redesign to avoid the remains or deeding the area into a permanent conservation easement. If avoidance is not feasible, recovery of the remains will be planned with the MLD. Treatment and disposition of human remains in Solano County shall be conducted in accordance with Yocha Dehe Wintun Nation's Treatment Protocol provided by consulting Tribes (see Appendix F).			
Section 5.7 Geology and Soils	**RR GEO-1: Compliance with CalGEM Field Rules**	Gas wells and pipelines shall be designed, constructed, and operated in accordance with applicable CalGEM Field Rules pursuant to CCR Title 14, Division 2, Chapter 4, Section 1722(k). CalGEM Field Rules are based on available geologic and engineering data from prior drilling operations and identify subsurface conditions and well construction requirements that must be considered during drilling and completion activities.	Prior to construction	CalGEM permit issuance to CRPC shall serve as compliance verification.	CalGEM, CRPC
Section 5.7 Geology and Soils	**RR GEO-2: Grading Permits**	Based on the area required for disturbance, CRPC shall obtain a Major Grading Permit from Solano County, a Grading and Erosion Control Permit from Sacramento County, and a Grading Permit from Contra Costa County. These requirements are intended to reduce soil erosion and the loss of topsoil.	Prior to construction	CRPC shall submit to CalGEM: a copy of Major Grading Permit from Solano County, a Grading and Erosion Control Permit from Sacramento County, and a Grading Permit from Contra Costa County.	CalGEM, CRPC, Solano County, Sacramento County, Contra Costa County
Section 5.8 Greenhouse Gas Emissions	**RR GHG-1: Compliance with Cap-and-Trade Program**	CRPC shall comply with all applicable requirements of the California Air Resources Board (CARB) Cap-and-Trade Regulation (California Code of Regulations, Title 17, §§ 95800 et seq.), including any applicable greenhouse gas emissions reporting, allowance surrender, recordkeeping, and compliance obligations for covered emissions sources associated with the Project.	Prior to construction and throughout the life of the Project	Compliance is administered and enforced by CARB. Documentation of compliance with applicable CARB reporting and Cap-and-Trade requirements shall be maintained by CRPC and made available to CARB upon request.	CARB, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
Section 5.9 Hazards and Hazardous Materials	**DF HAZ-1: Worker Safety and Environmental Awareness Project Training**	CRPC will implement Worker Safety and Environmental Awareness Project Training prior to and throughout Project activities. This training would cover biological resources and cultural resources awareness, emergency spill response, dust control measures, and other general construction measures to ensure Project worker safety and protection of sensitive resources at or near the Project site. All Project personnel would complete this training prior to working onsite.	Prior to construction/During construction activities	CRPC shall maintain a physical and digital list of Project workers who have completed the training and provide the list to CalGEM upon request.	CalGEM, CRPC and contractors
Section 5.9 Hazards and Hazardous Materials	**RR HAZ-1: Adherence to CRPC Facility Maintenance and Inspection Program**	CRPC will continue to implement their Facility Maintenance and Inspection Program during Project construction and operation. Additionally, in accordance with CalGEM regulations Title 14, Division 2, Chapter 4, Section 1774.2 (Pipeline Management Plans – PMPs), the Facility Maintenance and Inspection Program shall include: • A listing of information on each pipeline including, but not limited to: o Pipeline type. o Grade. o Installation date of pipeline. o Design and operational pressure; and o Leak, repair, inspection and testing history. • A description of the testing method and schedule for all pipelines.	During construction and ongoing throughout the life of the Project. PMPs shall be updated within 90 days of qualifying changes and submitted to CalGEM upon request.	CRPC shall submit a copy of Facility Maintenance and Inspection Program information to CalGEM to verify compliance. CRPC shall keep PMPs current and provide them to CalGEM upon request.	CalGEM, CRPC and contractors
Section 5.9 Hazards and Hazardous Materials	**RR HAZ-2: Adherence to Facility Consolidated Emergency Response/Contingency Plan**	CRPC shall implement the Consolidated Emergency Response/Contingency Plan (Spill Contingency Plan pursuant to CCR Title 14, § 1722) to minimize potential impacts from drilling operations and enhance awareness of unauthorized releases during Project construction or operation. The Consolidated Emergency Response/Contingency Plan includes the following information addressing issues and associated responses to an unauthorized release from Project construction or operation: • Emergency contact information. • Emergency containment and cleanup procedures. • Facility evacuation. • Emergency equipment availability and location; and • Training requirements	During construction and throughout the life of the Project	CRPC shall submit a copy of the Consolidated Emergency Response/Contingency Plan to CalGEM, maintain documentation of submittal, and update the plan as required.	CalGEM, CRPC and contractors
Section 5.10 Hydrology and Water Quality	**RR HYDRO-1: Clean Water Act Section 401 Water Quality Certification**	Prior to activities requiring a Section 404 Permit or otherwise affecting waters of the United States, CRPC shall obtain Section 401 Water Quality Certification, waiver, or other applicable authorization from the Central Valley Regional	Prior to construction/During construction activities	If required, CRPC shall obtain and submit a copy of the Section 401	CalGEM, CVRWQCB, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		Water Quality Control Board, if required, and shall comply with all certification conditions and water quality protection measures.		Water Quality Certification to CalGEM.	
Section 5.10 Hydrology and Water Quality	**RR HYDRO-2: Clean Water Act Section 404 Permit**	Prior to the discharge of dredged or fill material into waters of the United States, including wetlands, CRPC shall obtain authorization from the U.S. Army Corps of Engineers, if required, and shall comply with all permit terms and conditions.	Prior to construction/During construction activities	If required, CRPC shall obtain and submit a copy of the Section 404 Permit to CalGEM.	CalGEM, USACE, CRPC and contractors
Section 5.10 Hydrology and Water Quality	**RR HYDRO-3: Rivers and Harbors Act Section 10 Permit**	Prior to conducting any work, excavation, dredging, construction, or placement of structures within navigable waters of the United States, CRPC shall obtain authorization from the U.S. Army Corps of Engineers, if required, and shall comply with all permit terms and conditions.	Prior to construction/During construction activities	If required, CRPC shall obtain and submit a copy of the Section 10 Permit to CalGEM.	CalGEM, USACE, CRPC and contractors
Section 5.10 Hydrology and Water Quality	**RR HYDRO-4: Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP)**	CRPC shall obtain coverage under the State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit, Order 2022-0057-DWQ). Prior to the commencement of any grading, construction, or ground-disturbing activities, CRPC shall complete and submit Permit Registration Documents (PRDs) for coverage under the Construction General Permit to the State Water Resources Control Board and shall comply with all applicable permit conditions. The Construction General Permit requires implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in stormwater discharges and to meet applicable water quality standards. As part of permit compliance, CRPC shall prepare, implement, and maintain a site-specific Storm Water Pollution Prevention Plan (SWPPP) in accordance with permit requirements. The SWPPP shall identify all applicable Best Management Practices (BMPs), specify their locations and installation timing, and describe inspection and maintenance procedures. The SWPPP shall be maintained on-site at all times during construction, made available for review by regulatory agencies upon request, and uploaded and maintained in the Stormwater Multiple Application and Report Tracking System	Prior to construction/During construction activities	A SWPPP shall be implemented, available upon request and uploaded to the Stormwater Multiple Application and Report Tracking System (SMARTS).	CalGEM, SWRCB, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		(SMARTS) in accordance with Construction General Permit requirements.			
Section 5.10 Hydrology and Water Quality	**RR HYDRO-5: CalGEM Casing and Cementing Requirements**	Wells shall be cased and cemented in accordance with applicable CalGEM requirements and Title 14 CCR, Sections1722, 1722.2, 1722.3, 1722.4, 1722.5, and 1722.6 to prevent migration of drilling fluids, hydrocarbons, or formation fluids into protected groundwater zones.	Prior to construction/During construction activities	Compliance shall be verified through CalGEM permit approval, field inspections conducted by CalGEM, and review of required well construction and completion records.	CalGEM, CRPC and contractors
Section 5.13 Noise	**MM NOISE-1: Construction Equipment Noise Monitoring**	During drilling activities, Project personnel shall implement initial noise monitoring at the Project area's nearest Project boundary during active nighttime drilling activities. If measured noise levels exceed 50 dBA, CRPC shall implement the following measures to reduce noise generated by construction activities to a level less than 50 dB: • Installation of temporary noise barriers or sound walls. • Installation of sound-attenuating enclosers around the shaker. Installation of exhaust silencers on generators; and • Installation of acoustical blankets around portions of the drill rig mast to mitigate noise from the top drive.	Prior to construction/During construction activities	CRPC shall maintain monitoring reports. Monitoring documentation shall be retained on-site and made available to CalGEM upon request.	CalGEM, CRPC and contractors
Section 5.18 Tribal Cultural Resources	**MM TCR-4: Tribal Notification of Ground-Disturbing Activities**	At least thirty (30) calendar days prior to anticipated ground-disturbing activities within each county, CRPC shall provide written notification to consulting Tribes. The notification shall include: o Anticipated construction start date o General construction phasing schedule o Contact information for CRPC's Project Manager and field supervisor For Tribes that have requested monitoring or site-specific notification, CRPC shall provide written notice at least seven (7) calendar days prior to ground-disturbing activities at each individual well pad. If schedule changes occur that make 7-day notice infeasible, notice shall be provided as soon as practicable, but no less	Prior to construction activities	CRPC shall maintain records of all Tribal notifications issued and shall make such records available to CalGEM upon request.	CalGEM, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		than 48 hours prior to disturbance, unless otherwise agreed to by the requesting Tribe. This measure provides notification only and does not independently require monitoring.			
Section 5.18 Tribal Cultural Resources	**MM TCR-5: Tribal Monitoring During Ground-Disturbing Activities**	Where tribal monitoring has been requested by consulting Tribes, CRPC shall provide Tribal monitors with reasonable access to observe ground-disturbing activities, including grading, excavation, and drilling into previously undisturbed native soils. CRPC shall provide notification to Tribes consistent with MM TCR-4. If more than one Tribe requests monitoring for the same location, the Tribes may coordinate among themselves to designate monitoring representation. If coordination does not occur within a reasonable timeframe, CRPC, subject to CalGEM oversight, shall establish a monitoring schedule that allows monitoring while maintaining construction feasibility and safety requirements. Tribal monitoring shall be observational in nature and shall not authorize work stoppage except as provided under MM CUL-2/TCR-2 and MM CUL-3/TCR-3.	Prior to construction/During construction activities	Monitoring reports and documentation shall be retained by CRPC and made available upon request.	CalGEM, CRPC and contractors
Section 5.18 Tribal Cultural Resources	**MM TCR-6: Temporary Retention of Excavated Native Soils and Drilling Cuttings.**	At sites where Tribal monitoring has been requested pursuant to MM TCR-5, CRPC shall temporarily retain and store excavated native soils, including drilling cuttings and associated materials generated from previously undisturbed native soils, on-site prior to off-site transport or disposal. CRPC shall provide secure (locked), on-site storage for culturally sensitive soils or objects temporarily retained for Tribal inspection, with access limited to Tribal Representatives. Storage may range from a lockbox to a shipping container or secure fenced area depending on the quantity and nature of materials. Excavated soil and drilling cuttings shall be staged in a designated area accessible for visual inspection by the Tribal monitor and qualified archaeologist. Retained materials shall be held for a period not to exceed 72 hours following excavation or generation, unless a potential Tribal cultural resource or human remains are identified, in	During ground disturbing construction activities	Monitoring reports and documentation shall be retained by CRPC and made available to CalGEM upon request.	CalGEM, CRPC and contractors

Project IS/MND Section	Mitigation # Mitigation Title	Mitigation Description	Timing & Method of Verification	Reporting	Responsible Agency
		which case MM CUL-2/TCR-2 or MM CUL-3/TCR-3 shall be implemented. If no Tribal cultural resources or human remains are identified within the retention period, CRPC may proceed with off-site transport or disposal (See section 2.4.2.2 Drilling Waste Disposal for more information on the off-site transport and disposal of drilling waste). This measure applies only to soils and cuttings derived from previously undisturbed native soils and does not apply to imported materials, previously disturbed soils, or recirculated drilling fluids. Nothing in this measure authorizes indefinite delay or construction activities.			

7.0 REPORT PREPARATION AND REFERENCES

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APPENDIX A

WELL INFORMATION

APPENDIX B

DRILLING RIG LAYOUT

APPENDIX C

AIR QUALITY AND GREENHOUSE GAS EMISSIONS TABLES

APPENDIX D

PHASE I ARCHEAOLOGICAL STUDY REPORT AND ARCHEOLOGICAL RECORDS SEARCH (CONFIDENTIAL)

D1 – ESA Records Search

D2 – Padre Records Search

APPENDIX E

BIOLOGICAL TECHNICAL REPORT

APPENDIX F

STAFF REPORT ON BURROWING OWL MITIGATION